

BY GEORGE F. TAUBENECK ---

Department Store Selling

In 1932 reliable sources gave the News a figure of 11.7 per cent as an estimate of the portion of total electric refrigeration sales made through department stores. For the year just ended it would seem from a preliminary study of the data now being obtained in the survey, the figure may be close to 25 per cent.

Not a few manufacturers have reported that in any classification-by-volume of their retail outlets, department stores head the list for 1933.

Department store sales of Universal Cooler household models increased 15 per cent during the first quarter of 1933 over the same period of 1932.

According to R. C. Cameron, manager of the department store division, G-E did more than 12 times as much department store business during the first half of last year as it did in the first half of 1932.

From the merchandising clinic held Oct. 17 and 18 at the General Electric specialty appliance sales department headquarters in Cleveland, and attended by approximately 100 department store executives, much interesting information on department store merchandising practices was developed.

Informal discussions of the round-table variety brought out the following conclusions at the conference: (1) Style will be even more important in 1934 than in 1933; (2) Department stores should not subsidize instalment selling; and (3) Outside selling has an important place in the department store appliance merchandising program.

Reasons for department stores' rise are easy to find. The department store has an already-established clientele, who through long experience is confident of the store's ability to make good on merchandise which is not satisfactory. Show windows on well-travelled thoroughfares, efficient and highly trained advertising departments are other department store advantages.

A customer does not have to worry about such a large organization as a department store going out of business. Furthermore, even as they are good financial risks for the manufacturer, department stores are a convenient place to purchase for the customer, because they can finance long-time payment plans with small down payments.

It has been noted that, although a department store is exceedingly style conscious—a good example is women's clothes—it will rarely pioneer a large item such as an appliance. The department store prefers, and increasingly so, an established piece of merchandise in a refrigerator.

In fact, a general trend is reported

in progress in some of the large stores toward abandonment of carrying refrigerators made by small, little-known manufacturers.

Department store managers declare that there is now little necessity for handling units made by these companies, since large manufacturers are making units priced sufficiently low to attract department store trade and which have already gained some degree of public acceptance through national advertising. Having made their point by buying from "fly-by-nights"—thus forcing manufacturers and distributors to cut margins and supply them with refrigerators at much lower prices—department stores are now all set.

The store's service problem is reduced by handling standard makes, since distributorships and factory branches generally handle servicing of all units sold by the store.

Smaller manufacturers, consequently, have come to depend on style or price to win sales from the line-up of competing makes on a department store floor.

Price is still consistently played up in department store refrigeration advertising; and, as a corollary of this fact, it might be noted that department stores are still the principal dumping grounds for distress merchandise and out-of-date models.

No two manufacturing organizations have the same ideas concerning

Review of 1933 Events

Presented on this page is an instalment in Editor Taubeneck's summary of important news of 1933 in the refrigeration industry which should have appeared in the issue of Jan. 24 but which was held up because of the length of the "Underwriters' Test on Refrigerants" report published in that issue.

the best methods of conducting business relations with department stores. Policies on this subject have been consistently inconsistent.

In 1933 many stores provided for thorough sales training courses for refrigeration salesmen, and in not a few cases arranged for concentration of salesmen's effort on refrigeration alone or at least on fewer products than they have sold in the past.

Noting that the salesman who spends his day moving from one product to another usually becomes a mediocre salesmen of all appliances, a master of none, appliance department managers are attempting to establish real specialty selling methods within the walls of the store.

A case in point is the well-known Frederick Loeser & Co. store in Brooklyn, which attributes its good sales record largely to adoption of specialty selling methods.

Definitely branching out from traditional department store selling methods in 1933, Mandel Brothers in Chicago stated that its electric refrigerator sales force was composed entirely of outside salesmen.

Many of the larger manufacturers of electric refrigerators have succeeded in getting department stores to install separate departments (such as the General Electric store-within-a-store) for the sale of their products. Others sell their refrigerators under another brand name to department stores. Some distributors furnish their own trained men for floor salesmen.

Another department store trend was pointed out early last year by the National Retail Dry Goods Association—that of more cash sales in comparison with total sales.

Advertising and Sales Promotion

During 1933, six of the largest electric refrigeration manufacturers spent \$853,156 for advertising space in leading national magazines, according to statistics compiled by Curtis Publishing Co. Corresponding figures for 1932 were more than double this amount.

Six national magazines, more than 1,100 newspapers, 22 trade papers, and five times as many outdoor boards as were used in the spring of 1932 were scheduled to carry the story of Kelvinator domestic and commercial refrigeration to the public in the spring of last year.

Likewise, Electrolux launched a \$500,000 advertising campaign in connection with the announcement of its air-cooled refrigerator in March.

Air-conditioning department of General Electric Co. in New York City

announced that its 1933 newspaper advertising appropriation was double that of 1932.

"Reason-why" copy seemed to gain steadily in favor among advertisers this year, the trend being pointed out by Walter Daily, manager of the General Electric refrigeration department's sales promotion division, in a speech before Detroit's Adcraft club at the beginning of the year.

Theme of most of the speakers at 1933's Direct Mail Advertisers Association meeting in September was that usefulness of the product one is selling is its most important talking point.

Contests for the public and for salesmen, radio broadcasting, grandiose stunts, traveling displays, direct-mail campaigns, special seasonal slogans—all these featured prominently in 1933 electric refrigeration sales promotion and advertising.

Most unusual and large-scale of the stunts carried out in 1933 was the "42nd Street Special," a special train sponsored by Warner Bros. and G-E and carrying movie stars on a 14-stop cross-country tour from Hollywood to New York City to advertise the moving picture, "42nd Street," and the General Electric all-electric kitchen.

Under the direction of Walter Daily, the stars visited G-E distributors' showrooms in important cities en route, broadcast for G-E over the radio, appeared at movie houses, and attended inaugural events in Washington March 4.

One car of the foil-covered train was turned into an electric kitchen, and the stars plugged for General Electric products at all appearances, used the kitchen for light snacks.

Crowds endeavoring to get a glimpse of the celebrities in most of the towns were among the largest turnouts in civic history.

Last big stunt of the year was the beginning of Phillips Lord's cruise on the sailing vessel *Seth Parker*, under the sponsorship of Frigidaire.

Radio broadcasts from the ship—which left Portland, Me., Dec. 5—are featuring Phillips Lord in person and in his role of *Seth Parker*, seamen's chants, speeches by celebrities at points visited, and descriptions of ports of call all over the world.

At each point on the Atlantic Coast where the *Seth Parker* ties up, Frigidaire distributors and dealers are being contacted by Lord and the ship's crew.

Principal sales and dealer-getting contests of the year were: General Electric Man Hunt, opening April 3, won by W. L. Thompson, Boston distributor; Westinghouse Turn Your Own Corner campaign, April 3 through June 10; Frigidaire Set Your Own Quota drive during July and August; Westinghouse late summer Master Builders contest, won by Los Angeles Wesco; General Electric Stock Market Campaign, from Sept. 18 to Dec. 23, won by Alabama Refrigeration Co., Birmingham; and the annual Kelvinator Derby, July 24 to Sept. 16.

In other contests, the public participated. Westinghouse's "Owner's Club" plan was such a campaign, built around the idea of obtaining prospect's names from users. "Friends of Majestic" was a similar contest introduced in April by Grigsby-Grunow, in which merchandise premiums were given to users turning in prospects, providing the prospect was sold a refrigerator during the campaign.

To bring public attention to the company's name, Gibson Electric Refrigerator Corp. in July announced nationwide quest for "the Gibson Girl of 1933."

Other unusual sales promotional ideas were the Westinghouse showroom-on-wheels which travelled about the country demonstrating Westinghouse appliances; Gibson's campaign through its distributors and dealers whereby it received names and addresses of parents of babies, and then mailed this list literature on pure food for children and how Gibson keeps food pure; Frigidaire's slogan, "Uses no more current than an ordinary light bulb"; the June advertising motif adopted by Westinghouse, "Here Comes the Bride."

Norge's Business Building Program was offered to its selling organization to increase fall sales, and at the November convention an intensive, year-long merchandising and promotional campaign was announced for 1934. The program calls for expenditure of more than \$1,000,000 on advertising.

Important radio programs were divided between General Electric, Westinghouse, and Frigidaire.

Lily Pons was featured in a G-E broadcast during January. Jane Froman and Phillips Lord were highlights of Frigidaire programs last year. Outstanding Westinghouse program was the Octavus Roy Cohen serial mystery drama, the "Townsend

Murder Mystery," launched as part of the company's spring advertising.

Radio advertising was chief topic of discussion at the General Electric conference of distributorship sales promotion managers in October.

"Our chief problem in connection with radio," said E. H. Campbell, Rex Cole sales promotion manager at this meeting, "is that of getting salesmen to translate interest in entertainment into interest in appliances."

Spot news announcements, at this meeting, seemed to be favored over long programs as result-getters.

* * *

Century of Progress

Energies of most electric refrigeration sales promotion and advertising departments during the past year were heavily expended on elaborate exhibits for the Chicago World's Fair.

Refrigeration played two important roles in A Century of Progress Exposition.

One of these roles was the application of refrigeration to models of industrial processes, food-serving establishments, and air-conditioning equipment employed in exhibits which—like a drug-manufacturing demonstration which requires tempered air—would not have been possible without automatic refrigeration.

More prominent were numerous displays of electric refrigerators in model homes, all-electric kitchens, and exhibits of individual refrigerator manufacturers.

Following refrigeration manufacturers were represented at the Fair. They are listed with their principal exhibits.

General Electric—"House of Magic," talking all-electric kitchen, complete line in the Electrical building, water coolers (Filtrine equipped with G-E machines).

Frigidaire—Air-conditioning equipment for General Motors building, main showroom with entire line in General Motors building, biological cabinet in medical section of the Hall of Science, exhibit in Electrical building.

Kelvinator—Display of complete line on lower floor of Electrical building, models in central station exhibit.

Norge—Complete line, and operating radiator, in Electrical building.

Westinghouse—Large exhibit of Westinghouse products in Electrical building (including "work-it-yourself" electric mysteries), "mushroom" lights on World's Fair grounds.

Grigsby-Grunow—Five display windows in Electrical building.

Servel—Gas and electric refrigeration in Home Planning Hall.

Gibson—Exhibit of refrigeration line in Home Planning Hall.

Stewart-Warner—Complete refrigeration, radio, and home movie line on balcony between Communications and Electrical buildings.

Grunow—Operating unit in Hall of Science basic sciences group.

In addition to these exhibits, several electric refrigerators were displayed in the Porcelain Enamel Parade, exhibit of the Porcelain Enamel Institute in the General Exhibits Group. This display demonstrated methods of fusing porcelain enamel on metal for use in appliances and building materials.

The central station industry exhibit occupied the entire second floor of the Electrical building at the Fair. Theme of the display was the utilization of electricity in the home, in industry, business, commerce, and agriculture, with a background depicting the development and increasing acceptance of electrification. Over 30 individual displays made up the combined exhibit.

American Radiator air-conditioning

equipment was housed in the "Garden of Comfort" erected by the group of companies which manufacture the equipment.

Time-Fortune Pavilion was air conditioned by York Ice Machinery Corp.

In the General Exhibits group, Brunswick-Balke-Collender showed the evolution of bar fixtures from the nineties to post-legalization 1933.

Modern developments in housing were among the most-visited Fair buildings, and each of them included kitchens featuring electric conveniences.

Ferro Enamel Corp. and the American Rolling Mill Co. cooperated in building a \$5,000 frameless steel house with complete Westinghouse all-electric kitchen. In the Lumbermen's Association house a Gibson electric refrigerator was to be found in the kitchen, and a Holland furnace conditioned the air.

A Servel Hermetic refrigerator, a Hotpoint electric range, and an Ig-Kold air-conditioning unit were part of the Brick House equipment.

The Good-Housekeeping Stran-Steel house—of steel frame construction—had a Kelvinator in its kitchen. Built as an example of quick assembly of pre-fabricated units in many combinations was the General Houses, Inc., contribution to housing. General Electric, one of the group of companies which make up General Houses, Inc., supplied the kitchen equipment in this house.

General Electric Kitchen Institute also planned the gray-and-chromium kitchen for the "House of Tomorrow," most advanced house at the Fair. Architect George Keck of Chicago and Century Homes, Inc., constructed the "House of Tomorrow" as an experiment to see how the public would react to radical departures in housing. Price being no object, this circular steel-and-glass house was built around a central mast containing all utilities, and included among its luxuries an airplane hangar, complete tool shop, electrically controlled doors, solariums, concealed lighting, and air conditioning. Clear glass was used for the walls with shades for privacy.

Frigidaire refrigeration was used in the Florida house, designed to typify comfortable living in the tropics.

Some of the houses displayed Majestic radios. In the Masonite house kitchen was an Electrolux refrigerator.

ANSUL

DEPENDABLE

REFRIGERANTS

SULPHUR DIOXIDE

Pure, bone dry and free from all foreign materials. Contents of every cylinder analyzed before shipment. Available at 40 warehouses conveniently located.

METHYL CHLORIDE

Fast freezing, stable and non-corrosive. Contents of every cylinder tested before shipment to assure low moisture and acid content. Available in any quantity, spot or contract shipments.

ANSUL CHEMICAL CO.

MARINETTE, WISCONSIN

Copeland Meets Every Demand

Three distinct new models have been added to our Commercial line, making a total of 21 Commercial Condensing Units now available to the trade, and have been placed in regular production.

Our sales and engineering forces are alive to the needs of the business. They are well abreast of the times and experienced in meeting its requirements.

The new sizes now available are:

Model Q-2, 2 cyl. Air-cooled, 1/3 H.P.
Model SA, 2 cyl. Air-cooled, 3/4 H.P.
Model V, 2 cyl. Water-cooled, 1 1/2 H.P.

Our line of Household refrigerators will be announced in this publication February 21st.

Distributors awake to the importance of correct engineering, moderate prices, and exclusive territories, are invited to write or wire for our money-making proposition.

COPELAND REFRIGERATION CORP., Mt. Clemens, Mich.

Copeland

DEPENDABLE ELECTRIC REFRIGERATION

ANNOUNCEMENT
Feb. 21st!

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS. MEMBER PERIODICAL PUBLISHERS INSTITUTE.

VOL. 11, NO. 8, SERIAL NO. 257
ISSUED EVERY WEEKCopyright, 1934, by
Business News Pub. Co.

DETROIT, MICHIGAN, FEBRUARY 21, 1934

Entered as second-class
matter Aug. 1, 1927

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FEB 21 1934
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TEN CENTS PER COPY
THREE DOLLARS PER YEAR

Demonstrations Major Point in Frigidaire Plan

Factory Worker's Talk Is New Feature at Dayton Meeting

By George F. Taubeneck

DAYTON—"Ours is a Frigidaire '34." That's the sales slogan for all good Frigidaire men during the coming season. And here's the idea: There are now so many Frigidaires in use that prospects may see old models in friends' homes and fail to drop into Frigidaire showrooms to see the 1934 models—which, Frigidaire men claim, are vastly different and better than Frigidaires of yesteryear.

Pride of ownership appeal is thus utilized in the same fashion as automobile manufacturers employ it to sell current models. Distributors and branch managers gathered in Dayton last week approved the idea, and added a slogan for themselves: "Make it a Frigidaire '34."

Something new was injected into the sales convention when President E. G. Biechler brought to the platform Chairman Rockwell of the Frigidaire (Concluded on Page 20, Column 1)

Kelvinator '34 Story Carried to Dealers

DETROIT—As a final step in preparation for its 1934 sales drive, Kelvinator Corp. this month is conducting 78 one-day meetings in principal cities to inform dealers and salesmen of the company's selling plans.

Four crews of factory officials are conducting the meetings. Heading these groups are R. I. Petrie, sales manager; Vance C. Woodcox, director of advertising and sales promotion; J. A. Harlan, commercial sales manager; A. H. Reinach, manager of distributor commercial sales, and H. E. Markland, department store division.

By telephone, each meeting is addressed by George W. Mason, president, and H. W. Burritt, vice president in charge of sales, speaking from their Detroit offices.

Slide films, synchronized with sound, (Concluded on Page 20, Column 4)

Thompson & Carrier to Address Detroit Engineers

DETROIT—R. J. Thompson of Kinetic Chemicals, Inc., and Willis Carrier, head of Carrier Engineering Corp., will address the next meeting of the Detroit section of the American Society of Refrigerating Engineers Monday night, March 5, in the Statler Hotel.

Mr. Thompson, a refrigerating engineer with the du Pont subsidiary which manufactures F-12 and F-11, will talk on properties of these new refrigerants, with particular attention to air conditioning. Mr. Carrier, one of the pioneer air-conditioning engineers, will talk on "Greater Aspects of Air Conditioning."

F. M. Cockrell, publisher of ELECTRIC REFRIGERATION NEWS, is chairman of the meeting. Dinner will be called at 6:15 p. m.

Adkins and Conkey To Sell 'Frostoffs'

NEW ROCHELLE, N. Y.—D. L. Adkins and C. J. Conkey have organized the Frostoff Co., Inc. here to manufacture and sell the Frostoff defrosting device to the refrigeration industry, having purchased the entire assets of the former Connecticut company of the same name.

Mr. Adkins was associated with Servel, Inc. in Evansville for ten years, having been secretary-treasurer of that company, while Mr. Conkey was formerly sales manager of Servel.

The Frostoff unit consists of a self-starting synchronous motor, a Water-

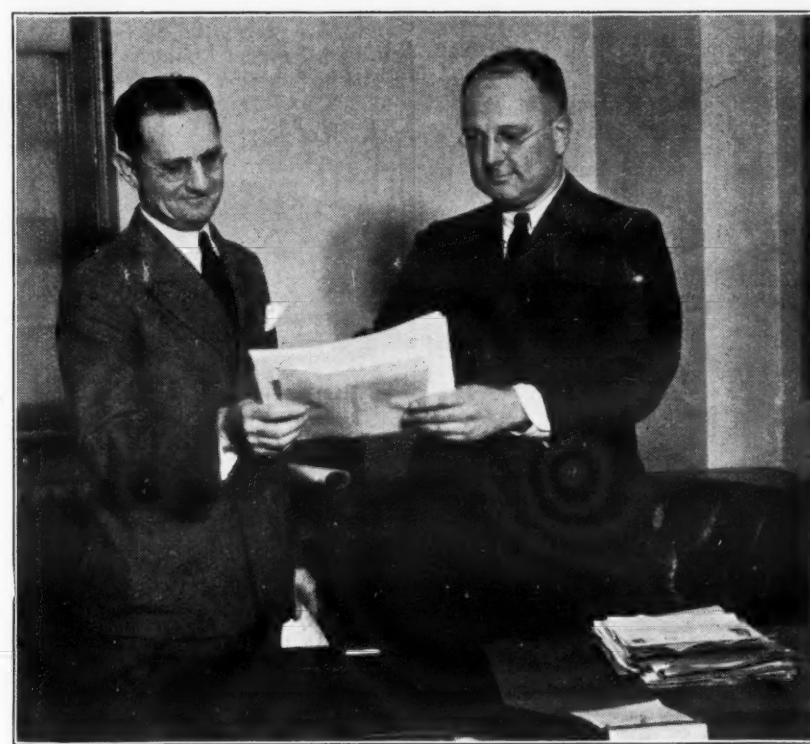
(Concluded on Page 20, Column 1)

Seeger Goes to Dulux; Plant Busy

ST. PAUL—New plant equipment for applying the new Dulux finish to refrigerator cabinets has been installed by the Seeger Refrigerator Co., here, and the factory is already in production on household cabinets finished with Dulux.

The company has two working shifts a day, according to Walter Seeger, vice president, and orders now on hand require the addition of a third shift as soon as the necessary number of skilled employees can be obtained.

When a 30-Carload Order Comes In



Henry W. Burritt gives his personal attention to the order placed by Raymond Rosen & Co. and brought in by District Manager C. V. Calkins.

Refrigeration Division To Discuss Code at Feb. 23 Meeting

DETROIT—Refrigeration Division of National Electrical Manufacturers Association will meet Friday, Feb. 23 in Cincinnati with Powel Crosley, Jr., president of Crosley Radio Corp., as host.

Part of the proceedings will probably be devoted to further consideration of the proposed code of fair competition for the electric refrigeration industry, particularly the clause dealing with service policy and replacement costs.

A general meeting of the electrical industry will be held March 1 in the ballroom of the Commodore hotel, New York City, under the auspices of Nema, to consider proposed changes in the code for the electrical manufacturing.

(Concluded on Page 20, Column 4)

DETROIT—What Kelvinator officials say is the largest single order for refrigerators ever placed by an independent distributor was received here last week by Kelvinator Corp. from Raymond Rosen & Co., distributor in Philadelphia.

The order, calling for an entire trainload of 1934 Kelvinators, comprising 30 freight cars, was brought to Detroit by C. V. Calkins, eastern district sales manager, and turned over to H. W. Burritt, vice president in charge of sales.

Orders for more than \$250,000 worth of refrigerators were brought in by Mr. Calkins, with from one to three carloads each being taken by Barber & Ross, Inc., Washington, D. C.; Kelvinator-Bohman Co., Hagerstown, Md.; Landis Electric Shop, Lancaster, Pa.; and Consolidated Gas Electric Light & Power Co., Baltimore.

Largest single refrigerator order previously reported by ELECTRIC REFRIGERATION NEWS was one for 24 carloads of Norges, shipped from the Norge factory on April 6, 1933, to Trilling & Montague, Philadelphia.

McCord Making Petrogas System To Cool Trucks

Shell Petrogas Used to Refrigerate, then To Drive Trucks

DETROIT—McCord Radiator & Mfg. Co. has just completed arrangements with the Shell Oil Co. for the exclusive manufacture and sale in American under Shell patents of a fuel and refrigerating system for trucks, employing Petrogas, a Shell product similar to propane.

In this system Petrogas in compressed liquid form is carried in containers under the chassis and the fuel is fed by pipe line from these containers to an evaporator located within the storage compartment of the truck, and thence to a mixing valve which communicates directly with the engine manifold. The expansion of the fuel from a liquid to a gaseous state within the evaporator produces the required refrigeration in the truck interior.

McCord engineers declare that from a fuel standpoint Petrogas is comparable with ethyl gas in that it may be used advantageously with high compression motors. As a dry gas, the en-

(Concluded on Page 15, Column 1)

G-E to Open 66-Day Campaign March 15

CLEVELAND—Beginning March 15, General Electric refrigerator distributors will launch a concerted, concentrated sales drive to realize 50% of their entire year's quota in 66 days.

Discussion of this drive featured the annual national spring sales convention of distributors which was held last week at Nela Park, attended by some 200 distributors and key men of their selling organizations.

Tenor of the meeting and attitude of the company was summed up by the statement of T. K. Quinn, vice president of General Electric and chairman of the company's home appliance sales committee, who said:

"Two years ago at our distributors' convention in Miami, I purposely urged retrenchment because the busi-

(Concluded on Page 20, Column 2)

Six Frigidaire Executives Putting Over the 'Big Show'



Candid camera snapshots taken by the editor from a second row seat at the Frigidaire distributor's meeting in Dayton last week. (1) Demonstration scene from a skit. (2) "Hike" Newell and Frank Pierce plot a surprise in the wings. (3) Jim Nance tells the air-conditioning story. (4) Orator Ellsworth Gilbert. (5) "Army" Ambrose in action. (6) Words from President Biechler.



(1) Frigidaire distributors form an audience as Ellsworth Gilbert and "Army" Ambrose show the ensuing dramatic skit. (2) Dealer tells field representative that he needs only one floor model. (3) Dealer tries unsuccessfully to sell prospect a deluxe model without having one to demonstrate. (4) Convinced, the dealer phones the factory and orders a full line for display.

BY GEORGE F. TAUBENECK --

"By Request"

How many times have you heard a baritone sing "The Road to Mandalay" (or, more recently, "The Last Round-Up") "by request?"

Chances are, of course, that the singer's mother requested "Mandalay" or "Round-Up," and that the singer is burdening his audience with the rendition because he feels as sure as God made minute members of the apple family that the song in question shows off his golden voice in a diamond-studded platinum frame.

Well, we're going to write a piece this week "by request"—and the situation, if not an identical twin to the one outlined above, is at least a blood relative.

Commonest request we get from our readers is to "lambast hell out of those revolving so-and-so price-cutters down in our territory" or to take Frigidaire for a ride, or to "put So-and-So where he belongs—don't just come right out and say anything, but sorta dig him with sumthin' kinda clever yet effective—you know wot this mean" or to prove to manufacturers in a ringing editorial just why expensive national magazine advertising should be cut out and the difference turned into longer discounts.

Every once-in-a-while, however, some kind soul who was undoubtedly brought up by the right kind of mother comes up to us and says:

"Why don't you write more of those stories about cities like you used to—now my home town," etc.

Obvious answer is that we've already written about most of the cities prominent in the refrigeration industry.

At the G-E meeting in Cleveland last week, however, we got no less than five honest-to-Jupiter requests from good citizens of Refrigeraria for a little travelogue on Bermuda—"like the one you did on Cuba."

And so—bless you, my children—this time we'll not write about the new smoothness in P. B. ZIMMERMAN'S forensic delivery or how "KELLY" COURTRIGHT and "SQUIRE" HEAD cooked up a new sales promotion scheme for WALTER DAILY, or the latest story about the current friendly relations between DAN ALEXANDER, behemoth WARDE STRINGHAM (whose hosts of admirers are now grooming him as the next challenger for PRIMO CARNERA), and the Kurious Kleptomaniac of the Ku Klux Klan.

Instead we'll accede to popular (all five of 'em) demand and talk about Bermuda.

All About Bermuda

You may be disappointed in Bermuda. On the other hand, you may kind down and utter devout thanks that such a haven from noise, excitement, modernity, and a machine-made world has been spared for the soothing emolument of the battle-scarred and war-weary. You'll love Bermuda if you are:

(1) On a honeymoon.

(2) A rebel against the machine, and against the twentieth century "pace that kills."

(3) Writing a play, or a treatise on eighteenth century life, manners, and customs.

(4) Trying to read "Anthony Adverse" uninterrupted.

(5) Painting seascapes

(6) Cultivating a new cult—one of bogus Hindu origin, or the equivalent—in deep solitude.

If you go down with an other purpose in mind, you're not likely to find Bermuda what the doctor ordered. Here's your clue and cue: No automobiles are allowed on the island.

Don't go down in midwinter hoping to get a coat of tan. Chances are it will rain, in fits and starts, all the time you're there. The weather woman (it couldn't be a man) simply won't make up her mind down there.

If you're reasonably lucky and encounter sunny weather, its famed mildness won't offer enough ultraviolet rays to enable you to prove to your office associates, or to the checkroom blonde at Tony's, that you've been anywhere.

Don't go down for scenery. You will find more—of all places!—in the American Corn-and-Bible Belt. (Exception: the breath-robbingly beautiful blues of the surrounding sea.)

Don't go down expecting service. You won't be treated, in all likelihood, "like a favored guest."

You will eat when the hotel says you are to eat (and try and get a dish prepared the way you want it). You will drink when the islanders say you may drink (we've seen sober and totally unobnoxious Americans almost brutally tossed out of public bars at closing time (12:30 a.m.) merely because they begged the bartender to

serve 'em the drink they had ordered 10 minutes previously).

You will be ordered about by head waiters and doormen, and you will by no means be treated with anything like the same courtesy an untutored "mugg" of the gangster school would have accorded you in a pre-Repeal speakeasy.

And don't go down expecting to have a hilarious time. There simply aren't the means or the places for a celebration—making Bermuda almost unique as a resort.

Perhaps one of the best indications of the Bermuda attitude is to be found in a petition to the Bermuda legislature, written a quarter of a century ago by former President Woodrow Wilson and signed by no less than 112 "furniturers":

"We, the undersigned, visitors to Bermuda, venture respectfully to express the opinion that the admission of automobiles to the island would alter the whole character of the place in a way which would seem to us very serious indeed . . . The danger to be apprehended is chiefly from reckless tourists who would care nothing for local opinion or for the convenience and safety of others. This is one of the last refuges now left in the world to which one can come to escape such persons. It would, in our opinion, be a fatal error to attract to Bermuda the extravagant sporting set who have made so many other places so intolerable to persons of taste and cultivation."

Another significant fact. Excepting only St. Helena, Bermuda is the most isolated spot on the globe.

One goes to Bermuda for Peace and Quiet, for a Change and Rest, and for a glimpse of Bygone Days.

(BILL FIELDS—or somebody)—used to tell about the advertisement of a Bermuda hotel reading: "On bluff overlooking sea. Great place for change and rest." According to Bill, the advertisement was indeed accurate, for "the whole thing was run on a bluff." They may have overlooked the sea, but they certainly didn't overlook anything else for which they might enter an item in the bill. The bellboys got the change, and the landlord the rest of my money".

And there is no doubt about the fact that a Bermuda trip is a good rest cure. First of all, there's a grand boat trip down and back. You can leave New York on a Tuesday, arrive in Bermuda Thursday, leave Bermuda Saturday, and be back in New York Monday. Which gives you more time on the boat than on the island.

The Furness line steamers, *Monarch of Bermuda* and *Queen of Bermuda*, which shuttle back and forth between New York and Hamilton on regular runs, are excellent ocean-going liners, with every facility for comfort.

The *Queen of Bermuda* is 580 feet long, 77 feet wide, and 22,575 tons gross—and is, as you can see, no rowboat.

Daily movies, a fine salt water swimming pool, gymnasium, restful lounge, nightly dancing (the rocking of the ship forces one to create an entirely different dance technique), well-appointed bars, a teak verandah, glass-enclosed promenade, a magnificent dining salon which employs Chinese silk draperies to offset the striking Urban-like modernistic lighting effects, smartly appointed suites, comfortable cabins—what more could one wish?

After you get there, what? Well, you won't much care. There's something enervating and lazy about the climate. The breezes—and there are always a few little breezes—are the only genuine zephyrs we've ever encountered. The warmth is gentle, the light is gentle. Everything says: "Take it easy."

Sport? Sure. A little golf. Swimming, in marvelous water. But it's really more fun to look at the richly splendid blue hues of the water than to swim in it.

Scenery? Nothing you'll remember all your life. Yet it's all scenery. Get into an open carriage, drive easily along bright white roads, and let your olfactory nerves be soothed by the rows of old cedar trees, the hedges of varished oleanders, the billion-jewelled ocean, the virgin stretches of coral, the pink beaches, and the absence of billboards, hot doggeries, and filling stations.

You can limber up your legs on a bicycle, if you want, or you can go on walking tours. Everything you see or do will be restful.

Should you, hermit like, desire even more solitude and a further retreat into history, ferry over from St. Georges to the Island of St. David's, where the inhabitants are in the Old Testament stage of civilization. Whereas there are no automobiles in Bermuda proper, there are not even any horse-drawn carriages in St. David's!

Spring and summer clothing is

worn—the more comfortable the better. And that's nice. While you're there you may wish to purchase some English-cut Harris tweeds, or some doeskin, at tariff-less prices. (French perfumes cost less in Bermuda, too).

If you can spend only a day or two, and want to "see the island" just so you rest easily in your knowledge that you haven't missed anything, one of the smallest railroads in the world will haul you up and down the narrow little island with comparative rapidity.

This railroad is one of the few modern notes on the island; and yet, with its single, gasoline-driven cars, its neighborly and gossipy riders, and its Toonerville Trolley attitude, it seems to fit its surroundings, too.

Hamilton is the central terminus; St. Georges and Somerset the opposing ends of the line. You probably won't unglue your eyes from the window on one of these tram trips, for the ride is short and the outlook exceedingly varied.

You will look down over trestles onto greenish inlets from the sea. You will marvel again at the blues of the ocean as you skirt the shore. You will admire the coral cliffs as you pass through them, and you will feel content when you look out upon a wayside station nestling in an almost primeval cedar-trimmed bower.

Only 22 miles long, the railroad transverses the island from end to end. The tip-toe trip may be made in less than two hours.

Boarding the train at Hamilton at the Cenotaph (war memorial in front of the offices of the Governor and Colonial Secretary—Bermuda is a British colony), one heads out toward St. Georges slowly.

The quaint car edges through the carriage-and-bicycle traffic of Bermuda's capital city in a gingerly fashion, honking like a steamer in a fog.

This slow progress out of Hamilton, however, gives the reader a slow kaleidoscope of this colonial seaport town. Winding through tropical grounds one passes Tennis Stadium (the annual tournaments there draw distinguished entrants), Government House, Parliament, and the imposing Cathedral of the Church of England—which is a brief conducted tour of Hamilton.

Cutting through banana plantations and sailing by the Military Barracks (if you should happen by there on a Sunday morning, stop and watch the parade service), you come to Frascati Flatts, which once was a thriving little seaport. The harbor filled up, however, and now Flatts is chiefly a spot for luxurious winter homes of rich Americans.

Ten minutes from Flatts is Devil's Hole, a tourist-catcher which is a natural aquarium and grotto literally stuffed with leaping and snapping fish. These giant "groupers" stage fierce fights over any scrap of food tossed into the hole. Odd sounds issue from the water-pit at times.

Next railway stop, which comes after you have bridged over a river-like inlet, is the really fascinating Aquarium. There you will see more than 400 species of fish which have been captured in the waters surrounding Bermuda.

From the vicious green morays and the ferocious groupers and green morays which can bite holes in a one-inch plank to a sea anemones and living coral, from lobsters and octopi to sharpshakers, cowfish and cameleon-like angel fish, you will see almost every type of odd ugly, beautiful, and unbelievable fish your imagination could picture.

Examples: Spinclad fish which can eat their way out of a shark's stomach. Fish armored as effectively as a "tank." Fish which "pick the teeth" of larger fish by removing mouth parasites. "Angler fish," which catch food with their own fishing rod. Devil-fish which change colors and throw out a "smoke screen." Animals like plants. Fish which carry their eggs in their mouths until hatched. Fish which barricade the entrance to their dwelling before going to sleep. Crabs which disguise themselves by covering up under a sponge. Lizards which break off their own tails. Four-eyed fishes.

Best of all, for two bucks you can don a bathing suit and a diving helmet, and drop down into Harrington Sound to give this submarine life the once-over yourself. That, gentlemen, is an experience.

Comes next Bailey's Bay, where one stops for Tom Moore's Tavern, Swizzle Inn, the home of Lili perfume, and the caves. Crystal and Leamington Caves are truly impressive, but no more so than the subterranean palaces of stalactites and stalagmites to be found in Indiana and Kentucky. Annette Kellerman was filmed in "Neptune's Daughter" in one of these Bermuda caves, however.

If you're the least bit inclined to revere things historical and literary, the commercialized Tom Moore's Tavern will interest you more.

You may be entranced, too, by the House of Lili, a little cottage which is both showroom and factory. Here oleander, jasmine, and other native blossoms are converted into Lili perfume. There you can watch the flowers being packed in air-tight cases with a pomade and with fixatives like ambergris and civet, and follow the perfume-making process on through to the ten-dollars-an-ounce stage.

Back to the railroad and on toward St. Georges, you'll ride past Oil Dock Halt, which is Bermuda's fuel oil reservoir. And then you're into St. Georges, the end of the line.

Named for Sir George Somers, Bermuda's first colonist (he was shipwrecked there in 1609 while on his way to Virginia), St. Georges was the capital city until 1815. It apparently hasn't changed a bit since the Civil War days when it harbored blockade runners cargoed with English ammunition and food supplies.

St. Peter's church in St. Georges is the oldest church in the Western Hemisphere. Founded in 1612, it has a communion service presented by William III and Queen Anne in 1697, an odd layout which does not permit the congregation to face the altar, a well-kept yet mouldering graveyard, and an unearthly appearance and atmosphere.

Visit it at night. You can feel the spooks.

After nightfall the entire little town of St. Georges has a seductive quiet and musty antiquity that transports one, like the hero of "Berkeley Square," back a century or more.

In the fine old St. Georges hotel-mansion will be a string ensemble, gently playing chamber music from the eighteenth century. From the heights which protect this citadel of rest one looks down upon a dormant town whose narrow streets and winding alleys are indicated by cork-screw patterns of lights.

Down in the village there are a few stores open, with fewer customers. Negro youths saunter aimlessly in the shadows, now and then calling to one another softly.

In the town hall on the public square a really recent Hollywood release will be showing, and across the cobblestone square is an old English pub right out of a Dickens novel.

You wouldn't be in the least surprised to see barging out of its doors a lusty figure in a tri-cornered hat, red coat, and buckled knee breeches.

Move slowly up one of the hilly streets, sidestepping the bicycles with their tiny headlamps and clear bells, to the Masonic Lodge, and conjure up in your mind the attitudes and feelings of the people when they were trying witches there (it was once the colonial Parliament House). An islander was once executed there for stealing the socks of an artilleryman!

Site of the old powder magazine reminds one of the tale—now told proudly to American tourists—about the courageous Bermudians who neatly swiped the keys to the powder magazine from underneath the pillow of sleeping Governor Bruere, and let agents of General George Washington help themselves to desperately needed ammunition at a crucial period of the Revolutionary War.

After dark another St. Georges house with a haunted look is that of Mayor William E. Meyer, which is guarded by old cannon and is a replica of an old Bermuda fort. It is more lifelike and threatening than the entirely "legitimate" old Fort St. Catherine.

Every ship which comes to Bermuda must approach St. Georges and enter Five Fathom Hole. Very large liners must anchor there, and transfer their passengers by tenders to St. Georges or Hamilton. Most ships, however, can enter St. Georges Harbor, or go on to Hamilton via Murray's Anchorage on the northern end of the island.

Entrance to Bermuda is tricky and dangerous, and requires the services of an unusually skilled pilot.

The Hamilton-to-Somerset division of the Bermuda railway is not nearly so interesting as the one we have just left, chiefly because terminus Somerset is just another hamlet, whereas terminus St. Georges is the most interesting spot on the island.

Elbow Beach, second stop on the line, is about the best "swimmin' hole" on the islands. Adjacent are the confusingly-named Elba Beach, and Coral Beach. A popular resort hotel is nearby, atop a commanding hill.

Khyber Pass, spot where the road is hewn through a high cliff, is a vast pocket ravine when compared with its godfather in India, but has its own special little thrill just the same.

For a panoramic view of Bermuda you can stop at the Lighthouse (which boasts a half-million candlepower light), and labor up Gibbs Hill. Panoramas of this sort are always impressive; this one particularly so.

The contrast of the bright coral houses and the cedar backdrops which frame them, of the water's dark sheen

and the beaches' brilliant dullness, is a sight to be remembered and treasured for eons.

Adjacent Evans Bay, which has the sea for a front yard, is the most productive agricultural area in Bermuda. Foodstuffs are shipped directly from the patches—which are an onion's throw from navigable water—to the United States and Canada.

Passing White Hill—home of the oldtimmer Masonic Lodge which used to pay rent of one pepper-corn a year—the railcar reaches Somerset Bridge, where you may see Cathedral Rocks and lovely Ely's Harbour.

Somerset is a little country town. It is near Ireland Island, the base of the British navy in the North Atlantic. Visit Ireland Island if you get that far, not Somerset.

Mild is the word for Bermuda's climate. Average annual temperature is about 70° F., ranging from a winter average of 66° to a summer average of 80°. Southerly prevailing breezes are cool, constant, and caressing.

That broad belt of warm water which is a climatic blessing to so many resorts, flows between Bermuda and the mainland. Excessive summer heat is obviated by the mid-ocean location.

The equable temperature and the total absence of hay fever makes Bermuda a poor market for air conditioning.

Only 666 nautical miles from New York, Bermuda is the world's most northerly coral island group. Its latitude is 32°19' north, its longitude 64°49' west. Bermuda-bound ships have been known to miss the island completely, as the result of even an exceedingly minute and minor miscalculation.

Tiny corals, over a period of centuries, built Bermuda on the summit of a submarine mountain, which is said to be as high as Mont Blanc (about 15,000 feet). The eight principle islands (there are more than 100) comprise about 12,000 acres. Most of it is hilly—all of it is aeolian limestone—eroded and windblown coral—laid down in successive deposits during the ponderous march of geologic time.

Ever since Admiral Somers and his Virginia colonists were wrecked on the island, Bermuda has been considered an admirable spot for a residence. Many Americans own and maintain homes there. Many more rent cottages by the season.

Houses are customarily furnished and equipped completely, including even linen and silver, to renters. Unfurnished cottages are available, however. Leases are generally for a season's duration, the winter season commanding the higher price.

Domestic help is not expensive. Food, however, comes high. Hotels gladly furnish meals and service to residents of nearby cottages. Good private schools for children of all ages are available.

"Land of the Lily," Bermuda is distinctly flower-conscious. Its Easter lilies are famous the world over, and its roses, too.

The omnipresent Bermudiana, the green eleodendron, the white fleabane, the palmetto, cedar, oleander, and maiden-hair fern comprise lovely yet modest settings for the brilliance of the scarlet poinsettia, royal poinciana, scarlet cordia, nasturtium, passion flower, morning glory, geranium,

Map copyrighted by Rand McNally & Co.



1,000 Miles Ahead!

The phrase "a million dollars" flashes through the mind without leaving any definite impression. A million dollars is such a huge sum of money that the imagination refuses to grasp it. • And it's the same way when we say "there are a million more Frigidaires in use than any other electric refrigerator." It's hard to realize just what this means. • But if all electric refrigerators were laid end to end—each make in a separate row—Frigidaire would stretch out across the country approximately 1,000 miles ahead of any other make. • And now, with that picture in your mind, stop for a minute and think. • Isn't it obvious that the great majority of prospects who come into your showroom do so with a predetermined preference for Frigidaire? And isn't the conclusion also obvious? Yes! It's easier to sell people what they want than to attempt to switch them to something else. It will pay you to get our proposition for 1934.

Frigidaire
A PRODUCT OF GENERAL MOTORS

BY GEORGE F. TAUBENECK ---

(Concluded from Page 2, Column 5) mingled with lean years, of course, have come to Bermuda. Each bonanza has relied on the United States for sustenance.

In the late eighteenth century privateering made Bermuda rich. During the American Revolution the legalized piracy got its start; and during the War of 1812 her maritime prosperity became great indeed, for Bermuda vessels were the common carriers for trade between the United States and the West Indies. Blockade running was found extremely profitable (captains got \$5,000 for taking a blockade running vessel to and from Wilmington) during the Civil War. And now American tourists are feeding and clothing the islanders. Bermuda might be called, in all due respect, an American parasite.

Bermuda is ruled by a crown-appointed governor, an appointed Executive Council, an appointed Legislative Council, and a House of Assembly (the 36 members of which are elected by popular vote every seven years). Women cannot vote in Bermuda. Nor can any man who does not own 60 pounds' worth of real estate. Which, considering the preponderance of negroes, limits the electorate materially.

There are no political parties, no gangsters, and there has never been a murder on the islands! The police force spends much of its time playing soccer. There's no income tax, no sales tax, no inheritance tax. In fact, almost no taxes! No street numbers, either.

Tennis, yachting, golf, croquet, and cricket are the socially elect of the sports. To evening parties the guests ride—in their formal clothes—on bicycles!

Yachting is stimulated by frequent races, and by the activities of four

strong yacht clubs. The six good golf courses cater particularly to non-natives.

Swimming is good fun in Bermuda, and is indulged in particularly by the tourists. But there are no life guards! And few bath houses. Generally one changes behind a rock, or in some bushes. Opportunity for nude bathing is excellent.

Scene of Shakespeare's *The Tempest* is said to be Bermuda. Tom Moore, as a young man of 25, came to the island and wrote much of his richest verse—especially his love songs to "Nean" (who was Hester Louise Tucker, the 17-year-old bride of a St. Georges resident)—while serving there in the sinecure post of Registrar of the Vice-Admiralty Court.

Mark Twain spent much of his later life in Bermuda, for which he professed unqualified affection.

Eugene O'Neill possesses a home, "Spithead," on a little promontory in Bermuda. There he wrote "Strange Interlude," and worked out the first rough draft of "Mourning Becomes Electra."

Frances Hodgson Burnett, Henry Arthur Jones, Edna Ferber, Joseph Hergesheimer, Owen Jonson, and Julia Peterkin have all pursued their literary labors in Bermuda. Hervey Allen, author of the monumentally successful "Anthony Adverse," has maintained a cottage in Somerset for years.

Houses are built of coral limestone, tinted pink or salmon, with dazzling white roofs. You should see 'em in bright sunshine.

"Tray ceilings" inverted upward to get more air space, fireplaces with raised hearths, eighteenth century "powdering rooms" (tiny adjuncts to a living room, where guests may repair to tidy up a *toilette*), the "buttery" (pyramided minaret originally

designed as a cold storage room), outside water tanks, "eyebrows" (stone arch projected above a window or door), green shuttered blinds, stone vestibules, cedar verandas, and roofs made of sawed limestone slates are unforgettable features of Bermuda architecture.

You will see in Bermuda:

The "life" plant, a leaf of which will sprout against a wall or anywhere.

Red, white, and blue birds—the cardinal, the bluebird, and the white longtail.

Coral roads as white as doeskin, which dry up almost immediately after rain.

Houses built of sandstone dug and sawed out of their cellars.

A land without lakes.

One of the world's largest floating dry-docks.

Dance of the glowworms, precisely at the same minute every evening, during certain weeks in summer.

Whistling frogs.

Rock erosion spectacles, including the Natural Checker Board, Lion Rock, Carman Rock, Cathedral Rocks, and The Natural Arches.

Morning glories that are blue in the morning and change to deep purple as the day advances.

Hedges of red, pink, and white oleanders 20 feet high.

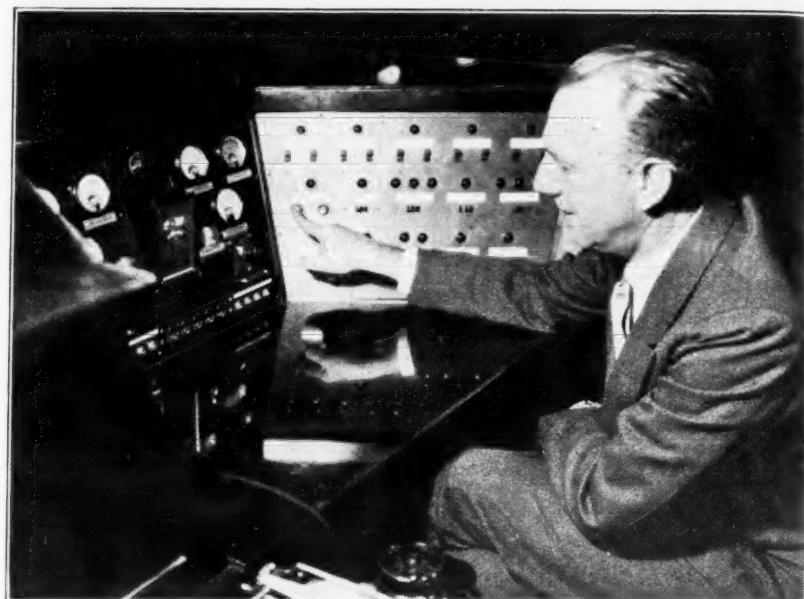
Tucker's Town, which is not a town and never was one.

People in St. George who have never been to Hamilton, 12 miles away. People on St. David's Island who have never been anywhere else.

If, at the beginning of this little piece about Bermuda, we dealt somewhat satirically with its charms, please forgive us.

Now that we've had to think about it in sufficient detail to write even a brief survey, it comes to us that Bermuda is really a pleasant place after all!

Crosley Tests His New Station



Powel Crosley, Jr., president of Crosley Radio Corp., inspects the master control console of the new 500,000-watt transmitter.

47,000 Refrigerators Sold During 1933 In Philadelphia

PHILADELPHIA—An increase of 43% in sale of domestic electric refrigerators in this area in 1933 is reported by the Electrical Association of Philadelphia. Last year 47,000 domestic units with a retail value of \$8,288,644 were sold in the Philadelphia territory, compared with 32,757 units in 1932, valued at \$7,085,375.

"While the dollar volume here last year exceeded that of 1932 by almost one and quarter million dollars, the average unit price of a refrigerator fell from \$216 in 1932 to \$175 in 1933," says George R. Conover, managing director of the association.

Figures in the report cover the sale of 16 nationally known lines of refrigerators, and do not include several makes outside the membership of the Philadelphia association.

Duluth Distributor Uses Special Train

DULUTH, Minn.—In a promotional stunt that drew the interest of all the major cities in the near Northwest, Kelley-How-Thomson Co., local distributor for Grunow products, recently concluded a week's tour with a nine-car special train which carried its products for display to various towns in Minnesota, North Dakota, and Montana.

The main observation Pullman on "The Train of Hardware Progress" was given over to a display of Grunow radios and refrigerators, with George Gaidzik of the sales promotion department of General Household Utilities Co. in charge.

Four baggage cars were filled with exhibits of hardware products, electrical equipment and lighting displays.

This promotional stunt fostered by Kelley-How-Thomson Co. had a dual purpose—to show new lines to the dealers and to give the public an advance look at the new products.

Officials of Kelley-How-Thomson Co. who accompanied the train included R. W. Higgins, vice president; G. S. Taylor, sales manager; I. Wold, department manager; C. Boyd, credit manager; F. M. Artley, department manager; and J. R. Davison, traffic manager.

The train wound up its tour in Minneapolis, where the exhibits were transferred to the Minnesota Retail Hardware exposition.

Creditors Plan to Buy Illinois Refrigerator

STERLING, Ill.—Creditors of the Illinois Refrigerator Co. met Tuesday, Feb. 13 here in the office of Philip H. Ward, referee in bankruptcy, to consider the organization of a corporation to purchase the company's plant No. 2 at Morrison, Ill., which is equipped for the manufacture of sheet porcelain products.

The proposed corporation, under the plan submitted, would pay \$8,000 for the property, \$2,000 cash and \$6,000 payable by notes.

All claims against the company are now adjusted except one substantial claim pending in the Circuit Court of Appeals, according to Mr. Ward.

Daniels to Manage Bronx Apartment Sales

NEW YORK CITY—Vernon E. Daniels, formerly a salesman in the Brooklyn apartment house division of Rex Cole, Inc., G-E distributor here, has been made sales director of the Bronx apartment house department.

Crosley Tests 500 k.w. Radio Transmitter

CINCINNATI—Work on Crosley Radio Corp.'s new 500,000-watt transmitter here is now virtually complete, and final operations of testing the equipment and circuits is in progress, according to Powel Crosley, Jr., president of the company.

Broadcasting necessary for these tests is made almost nightly between 1 and 6 a.m., with temporary call letters W8XO being used to identify the station. Experimental work is expected to be completed in March.

One feature of the giant transmitting station is its master control console, which provides complete supervision of the 500-kilowatt transmitter, and also of the Crosley W8AI and shortwave W8XAL transmitters. Various meters and switches control the circuits for automatically starting, stopping, and adjusting the essential circuits and the primary sub-station.

Mr. Crosley has given assurance that this ten-fold increase in power will not cause his station to blanket the dial and interfere with reception of other stations. The transmitter was constructed at a cost of more than \$400,000, and was supervised by RCA and Crosley engineers. It will produce an effective coverage of over 5,000 miles.

Norge Salesmen Seek \$10,000 in Prizes

DETROIT—Norge salesmen who are members of the company's Viking and Norseman clubs, honor organizations, started Feb. 1 on the first of Norge's 1934 sales contests. A total of \$10,000 will be distributed as prizes among the salesmen, each man receiving a share based on the proportion of his sales points to the total for his entire club.

McCord Refrigeration Products

COMMERCIAL EVAPORATORS

DOMESTIC EVAPORATORS

CONDENSERS

METLFLX ICE TRAYS

SPIRAL FINNED TUBING

SPIRAL COPPER FINNED IRON,

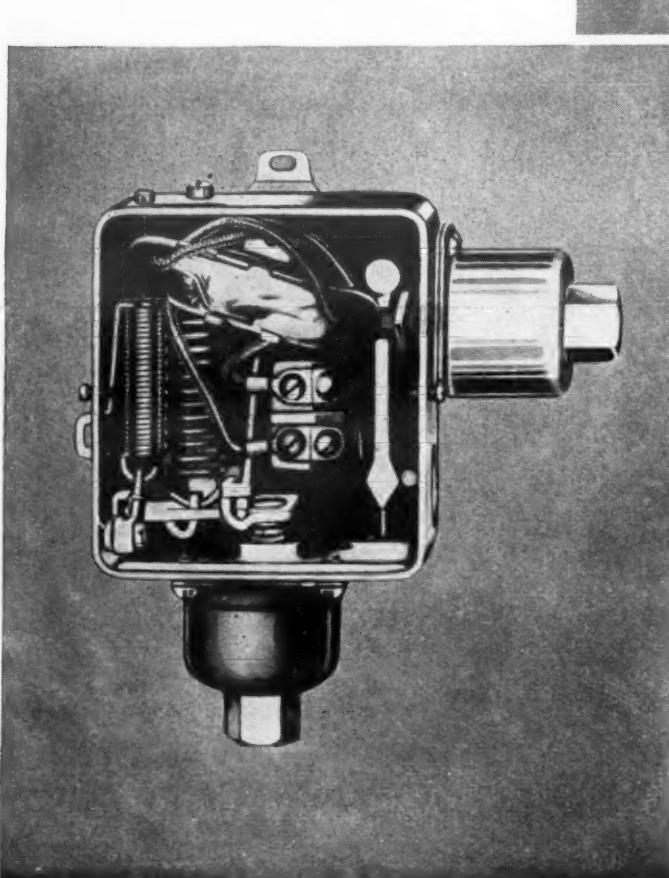
STEEL OR COPPER PIPE



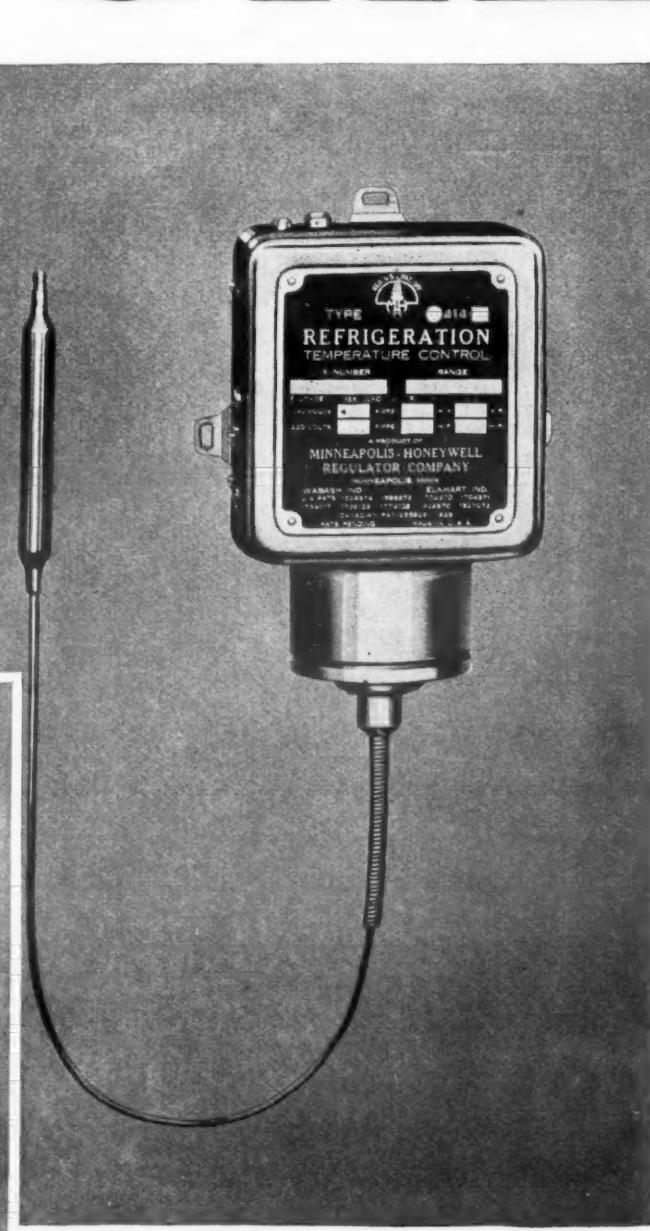
McCord Radiator & Mfg. Co.

DETROIT. --- MICH.

MINNEAPOLIS HONEYWELL
Control Systems



MINNEAPOLIS-HONEYWELL Refrigeration Controls are sturdily built, with fewer moving parts. Yet accuracy and precision are inherent qualities—in perfect keeping with their features such as Con-Tac-Tor Mercury Switches, visible scales and leveling devices. Minneapolis-Honeywell Refrigeration Controls are available in all desired temperature and pressure ranges and are adaptable to all types of commercial installations and to air conditioning applications. They're typically Minneapolis-Honeywell through and through. Minneapolis-Honeywell Regulator Co., 2807 Fourth Avenue South, Minneapolis, Minn. Branch and distributing offices in all principal cities.



KELVINATOR'S GREATEST ACHIEVEMENT

The 20th Anniversary Line!



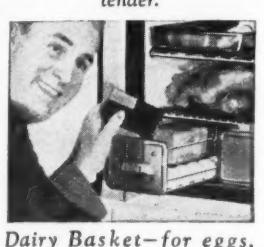
EYE-APPEAL . . . SALES-APPEAL . . . PRICE-APPEAL

Everything Necessary to make it

THE BIGGEST PROFIT PRODUCER OF 1934!



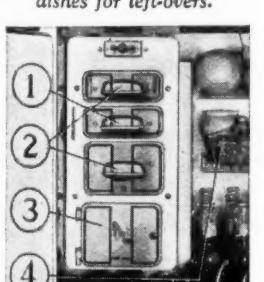
Vegetable Crisper—to keep fresh vegetables crisp and tender.



Dairy Basket—for eggs, cheese, butter, etc.



Thrift Tray—three china dishes for left-overs.



"4 refrigerators in 1"—all fully automatic. Unequalled ice capacity.



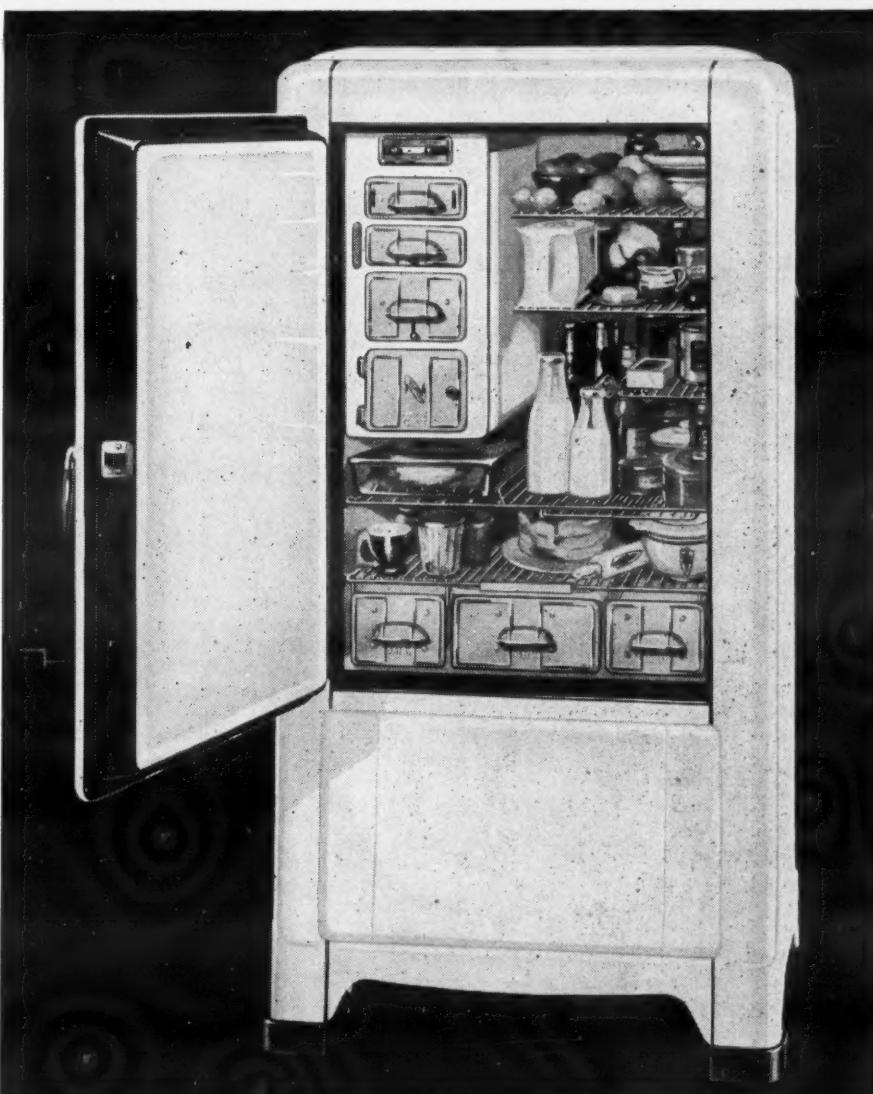
Beautiful two-tone, chrome-plated tray fronts.



World's Fastest Freezing Speed tray.



Frost Chest—for keeping meat, fish indefinitely.



LOOK at the illustration on the right. Have you ever seen a more beautiful electric refrigerator? There is eye-appeal that is irresistible—beauty, that is going to make electric refrigeration history!

But beauty is only a part of the story. Of far greater importance are the sales features that make it the *most desirable electric refrigerator on the market*.

For the first time, here is an electric refrigerator which has *a place for everything*—a place for meats, dairy products, vegetables, left-overs, bottled goods—with plenty of storage capacity left for the many other perishable foods which must be kept in the refrigerator.

And look at this list of exclusive features—vitally important features, every one of them—which can be had only in a Kelvinator:

- “4 refrigerators in 1”—four separate and distinct refrigeration services in the one refrigerator
- World's Fastest Freezing Speed—from water to ice in a national average of 80 minutes—hours faster than ordinary freezing speeds
- the Frost Chest, where fish, meat, or game can be kept indefinitely at below freezing temperature
- the KoldKeeper—a reservoir of cold that supplies refrigeration for about 12 hours after the current has been shut off
- hitherto unequalled ice capacity
- the Pastry Set, with the refrigerated rolling pin and large mixing bowl.

The 20th Anniversary Kelvinator line is *complete*—with a size and type for every home. And the traditional Kelvinator quality and craftsmanship are built into every model, regardless of size or price.

Record-Breaking Campaign of Advertising in 1934!

Behind this great new line will be the largest advertising and sales promotion campaign in Kelvinator history. 1934 is certain to be ANOTHER KELVINATOR YEAR.

The complete plan of merchandising, which has been prepared by experienced retail merchandisers especially for retail stores, and full details about the new line

will be sent upon request. Better still, let one of our factory representatives call in person and explain the entire Kelvinator sales agreement. Wire or write.



KELVINATOR CORPORATION, 14250 Plymouth Road, Detroit, Michigan. Factories also in London, Ont., and London, Eng.

KELVINATOR

'34 Electrical Sales Off to Good Start

NEW YORK CITY—With the exception of only a few divisions, the electrical supply trade has started 1934 with a volume of business better than that of any similar period during the past years, according to a survey just completed by Dun & Bradstreet, Inc., here.

Manufacturers' operations have gained with each succeeding week this year, and production schedules have been increased from 15% to 20% over those of this period in 1933, the report states. Orders have been chiefly from industrial plants, with small-sized motors in unusually brisk demand.

Makers of electrical appliances placed 1933 sales roughly at 739,000,000 units, compared with the 665,000,000—a gain of 8.1%. The comparative figures for 1931 and 1930 were 693,000,000 and 719,000,000 respectively.

"During the past 90 days," Dun & Bradstreet says, "the increase in sales has been abrupt and broad, running as high as 20% to 35% above the total for the comparative period in the year preceding. During January, sales were better than for that month in several

years, with industrial supplies moving particularly well.

Current demand appears to be strongest for washing machines, cleaners, heaters, irons, toasters, percolators, waffle irons, food mixers, and labor-saving kitchen appliances. There has been little improvement in the lighting and fixture division.

"The total sales of electrical supplies during 1933 ranged from 10% to 20% larger than in 1932, the rally toward the close of the year contributing heavily to the gain, as the dollar volume of December business was approximately 40% ahead of that of the preceding year, as household appliances were used extensively as Christmas gifts.

Sales of refrigerators, fans, and ranges gave retailers the largest summer volume they had in years. Sales on the instalment plan commenced to pick up last fall, with a wide margin of gain having been recorded thus far in the current year over the 1933 total.

In the report, prediction is made that prices on many appliances will be substantially increased before the close of the spring season, due largely to advancing quotations on raw materials. Prices as a whole, it is said, are averaging from 10% to 35% above the level obtaining during the first quarter of 1933.

While collections on current sales are reported good, the statement is made that there has been little reduction on old indebtedness which has been carried over for two or three years, particularly in amounts owing by some large contractors.

According to a tabulation of figures on failures among manufacturers, wholesalers, and retailers in the electrical supply trade from 1927 to the present time, there were no failures among manufacturers in January of this year, while only six wholesalers and retailers failed.

Phil Harrison Elected N. J. League Secretary

NEW BRUNSWICK, N. J.—Philip H. Harrison of the Philip H. Harrison & Co., Newark distributor for General Electric appliances, has been elected secretary of the Council of New Jersey Electrical Leagues.

Representatives of three newly formed leagues were admitted into the council at this meeting, these including the Bergen Electrical League, Burlington County Electrical League, and Jersey Coast Electrical League.

At the meeting it was decided to proceed with a plan for complete electrification of the home, office, and industry, which was inaugurated last year under the general chairmanship of Frank D. Pemberton of Newark. E. A. Seiple of Asbury Park was named chairman of the appliance sub-committee in connection with this activity.

Dairy Industries Show to Be Held in October

NEW YORK CITY—The Dairy Industries Exposition, claimed by its sponsors to be the nation's largest industrial exposition and in which refrigeration manufacturers have taken a leading role among the exhibitors, will be held Oct. 15 to 20 this year in Cleveland.

This announcement was made last week by the Dairy & Ice Cream Machinery & Supplies Association. The exposition was not held last year.

Dry-Zero Names Easter Plant Superintendent

CHICAGO—Norman R. Easter, formerly in charge of pliable slab production, has been named superintendent in charge of the Dry-Zero insulation plant here, according to Harvey B. Lindsay, president.

Gale T. Pearce, former superintendent, has left to devote all his time to management of properties owned by him in Iowa.

Grunow 'Hall of Science' Unit In N. Y. Museum

CHICAGO—A replica of the Grunow refrigerator demonstration unit displayed in the Hall of Science at A Century of Progress last summer has been placed in the New York Museum of Science and Industry in New York City's Daily News building, according to J. J. Davin, sales promotion manager of General Household Utilities Co. here.

15,000 Inspect G-E Coach At Toledo Auto Show

TOLEDO—Fifteen thousand people went through the General Electric kitchen coach on display at the recent Toledo Automobile Show, according to H. G. Bogart, Jr., local G-E distributor. The Bogart organization also had a portable all-electric kitchen at the show.

G-E Recipe Book Is Popular With Field

CLEVELAND—Orders have been received for more than 120,000 copies of the new General Electric recipe book, "The New Art," according to Walter Daily, sales promotion manager.

Dealing with all phases of the electric kitchen—cooking, refrigeration, and dishwashing—the booklet is used by salesmen in call-backs on customers to interest them in G-E appliances they do not own.

The application of modern home appliances to the art of home management is the theme of the book.

First section describes the General Electric Kitchen Institute and its services of recipe testing and kitchen planning. Foods that may be prepared by the housewife in advance and stored are taken up in the next pages.

Two complete sections on the refrigerator and the range include recipes, model menus, care of the appliance, food buying, and hints on the short cuts to good cooking.

The G-E electric mixer and dishwasher are described on two pages in the back of the book.

More than 30 natural color photographs brighten the pages of this 112-page book, and over 200 recipes are included in it. Its four-color cover has been produced by a lithographic process and then varnished. A huge palette, on which are arranged plates of electrically prepared food, forms the cover design.

Du Comb to Distribute Mayflower Commercial

DETROIT—W. C. Du Comb Co. here has just taken over distribution of Mayflower commercial refrigeration and air-conditioning systems, according to M. J. Laurie, commercial sales engineer for the firm. The company will do a wholesale business only, covering the state of Michigan from Grand Rapids east.

Department Store Takes On G-E Refrigerators

NEWARK, N. J.—Meyer Brothers department store of Paterson, N. J., has taken on the General Electric line of refrigerators, according to Thomas E. Babson, sales promotion manager for Philip H. Harrison & Co., Newark distributor.

Joins American Radiator



MARSHALL ADAMS

NEW YORK CITY—Marshall Adams, formerly sales promotion manager of the merchandising department of Westinghouse Electric & Mfg. Co., has been appointed sales promotion manager for the American Radiator Co., according to Arthur R. Herske, vice president and general sales manager of the latter organization.

Except for a period in 1928 when he operated a retail refrigerator company, Mr. Adams was associated with Westinghouse from 1923 until he received his new position. He joined Westinghouse as district advertising manager, with headquarters in Atlanta, Ga.

He then became successively manager of the merchandising division of the company from 1926 to 1927, manager of the sales promotion section of the domestic appliance department from 1929 to 1930, and assistant general advertising manager from 1930 until he was made sales promotion manager of the merchandising department in 1931.

Record-Holding Aviator Buys Frigidaire

PHILADELPHIA—Lieut. A. Soucek, holder of the world's altitude record, recently bought a Frigidaire from W. A. Clark, representative of J. J. Cock, Inc., Frigidaire distributor here.

Two Get Promotions From Electromaster

DETROIT—Richard B. Marshall, vice president and general manager of Electromaster, Inc., here, was made president of the company at the annual meeting of directors and stockholders Jan. 23. Gerald Hulett, sales manager, was appointed vice president and a director of the organization.

Mr. Marshall has been connected with Electromaster since its inception. Mr. Hulett has been associated with the company since 1930. As a member of the sales staff, he established the New England selling organization, then became sales promotion manager. Early in 1933 he was made sales manager.

Directors and officers of Electromaster, other than Messrs. Marshall and Hulett, are Earle R. Genthe, treasurer and assistant secretary; Henry H. Hubbard, secretary and assistant treasurer; and James M. Hutton, Jr., of W. E. Hutton & Co., Cincinnati.

Merriam Appoints New Wholesale Salesman

ALBANY, N. Y.—A. Wayne Merriam, General Electric distributor for Albany and the surrounding upstate New York territory, will offer more field assistance to his dealers by dividing his territory into two districts, with a separate wholesale representative for each district.

B. W. Stryker will cover the Southern and Western portions of the Merriam territory and Don Cairns will contact dealers in the Northern section.

Waldsmith, Frigidaire Distributor, Dies

ST. LOUIS—W. O. Waldsmith, president of the Del-Home Light Co., Frigidaire distributor here, died recently in Miami, Fla., after an illness of several months. Funeral services were held in St. Louis.

He was born in Indiana, and for a time lived in Dayton, where he was associated with the National Cash Register Co. While in Dayton he became a close friend of E. G. Blechler, then sales manager for Delco Light Co. and now president of Frigidaire, and a short time later went to St. Louis as a Delco-Light distributor.

ANNOUNCING The First Fully Automatic Defroster FROSTOFF

Five Million Prospects Ready To Buy!
Small in Price--BIG IN PROFITS--Easy to Sell!



Just plug it in, and forget defrosting forever! Beautiful bakelite case in white enamel; sturdy construction; finest type self starting synchronous motor. Guaranteed throughout.

The FROSTOFF Company, Inc.
271 North Avenue,
New Rochelle, N. Y.

I'm interested! Rush full details at once!

Name

Address

City State

REAL COMFORT COOLING

AUDITORIUM BY-PASS SYSTEMS

NOW AVAILABLE FOR ALL SMALL areas

Air Conditioning similar to that furnished for America's greatest Buildings, Theatres, Department Stores and Residences is now available in UNIT capacities suitable for homes, offices, stores—through extension of the

AUDITORIUM Licensing Plan—

UNITS embodying exclusive Auditorium features are now being made under license by a number of the largest manufacturers.

Utilizing the famous Auditorium inventions and basic improvements, such UNITS assure ideal comfort conditions with the advantages of moderate initial cost and economy in operating expense.

When you specify and install UNITS bearing the license plate of AUDITORIUM CONDITIONING CORPORATION, you insure continuous satisfaction of owner—and build greater prestige for yourself.

Investigate the reasons why noted engineers have for years recognized the AUDITORIUM Patents as "the key to economy in comfort cooling." Names of licensed manufacturers will be sent upon request.

AUDITORIUM CONDITIONING CORPORATION

New York Office

17 East 42nd St. New York

Oil Burner Authority Asks Regulation of Utility Merchandising

WASHINGTON, D. C.—Contending that "merchandising of appliances by public utility companies is vested with inherent evils adversely affecting the welfare of competitive groups," the Oil Burner Code Authority submitted a brief before a hearing on a code for the natural gas industry, calling upon the NRA to force the utilities to accept a code containing fair trade practice regulations similarly equitable to those included in codes governing such industries as the oil burner, gas appliances, and others.

After pointing out the unfair competitive advantages that would exist because of failure of the utilities to establish trade regulations, whereas other competitive groups had done so, the Oil Burner Code Authority urged the NRA to take either of the following two steps:

1. To require public utility companies to abandon entirely all merchandising activities of appliances; or

2. To require public utility companies to segregate their merchandising activities from their public utility functions and that such segregated merchandising departments be required not only to operate under fair trade regulations but also as though they were separate corporate entities, depending for revenue solely on the sale and service of such appliances under a uniform system of cost accounting.

Hammers Voices Objection

Morgan J. Hammers, chairman of the Oil Burner Code Authority, in voicing objections to the gas code, pointed out that it contained no statement "with respect to monopolies, monopolistic practices, elimination or oppression of small enterprises, or discrimination against small enterprises."

Nor would competitive groups be satisfied, Mr. Hammers stated, if the gas industry accepted the provisions of the retail code under which to operate, because "the retail code is not applicable for the reason that it is not designed for specialty selling methods that are essential to the competitive sale of appliances, such as oil burners, gas burners, and stokers; and further, the retail code does not contain any trade regulations now incorporated in other codes and which are essential for control of fair competition in the sale of the above appliances.

Grievances of Dealers

Field surveys conducted among dealers by the public utilities themselves, according to Mr. Hammers, uncovered several outstanding grievances among retailers generally.

First, that, because the utility was a monopoly and because its gas and electric current were virtually necessities, the utility had a tremendous advantage in selling appliances which would develop a load.

Secondly, that the utility could seemingly afford to sell appliances below cost because appliances were building a load for the utility and because the losses sustained could be covered by revenue from sales of gas and electricity.

Thirdly, that the average retailer can not compete against the utility's practice of offering merchandise on a small down payment with the credit protection involved in billing the consumer for such time payments which he paid with the monthly bill.

Fourthly, utility advertising of appliances was out of all proportion to the likely revenue it would bring in directly from the appliances sold. This disparity was equally true in the matter of house-to-house selling through high salaried sales representatives whose compensation is entirely out of proportion to the value of the appliance particularly when such salaries are not dependent on sales volume.

R. Cooper Salesmen Sell 171 Units in Day

CHICAGO—Members of the apartment house division of R. Cooper Jr. Inc., General Electric distributor here, sold 171 refrigerators on Feb. 1, all to be delivered immediately, according to S. Nides, sales promotion manager of the company.

Seventy of the refrigerators were sold to the Edgewater Plaza Apartments at 5425 Kenmore Ave., and a similar number went to the Seville Apartments at 4144 Sheridan Rd.

New Officers Elected By South Jersey League

CAMDEN, N. J.—I. Borstein of the Borstein Electric Co. here was elected president of the Electrical League of South Jersey at the organization's meeting Jan. 16. New vice president is J. T. Plasket, electrical contractor in Merchantville. Wilbur Peters, another electrical contractor of Camden, was elected treasurer, and Howard Suckling of the Public Service Electric & Gas Co. in Camden, was made secretary.



Watch dog of the family's food

In every family, food must be kept at least overnight. How confidently the housewife turns out the light and retires, knowing that the foodstuffs are all put away and that her refrigerator will keep them perfectly until tomorrow.

Every owner of an electric refrigerator assumes such dependable service. No good refrigerator manufacturer can afford to disappoint her. Not only is she definitely never again a prospect for that make, but she gladly, vindictively, tells her mother, her sister, her cousins, her bridge club. She says, "I wouldn't have another as a gift."

To assure faithful, dependable refrigerator service, honest workmanship and parts must be built into them. Many manufacturers honestly try to do so and they have put one source of trouble definitely behind them by using Dry-Zero insulation. They know that for the life of the refrigerator they and their users can depend on the unvarying efficiency and protection of Dry-Zero.

Dry-Zero Corporation, Merchandise Mart, Chicago, Illinois. Canadian Office, 687 Broadview Avenue, Toronto, Ontario.

What Is Dry-Zero?

A Waterproof Tropical Fibre

In certain tropical areas, notably Java and the South Sea Islands, there is a species of tree called *Ceiba Aesculifolia* that is very old botanically. It has survived centuries of unfavorable growth conditions because of clever provisions of Mother Nature's to insure propagation far and wide. In the giant pods which grow upon this tree are developed the small seeds to which are attached fine, white fibres. These fibres are so light that they carry the seeds (when the pods break open) on the wings of the wind for great distances. And to withstand the humid condition of the tropics, Nature has waterproofed them, each fibre being a sealed tube unaffected by moisture, so that even in tropical showers they sail on with their precious seeds over wide areas.

Fibres Grained into Dry-Zero

It is these natural qualities that have made the *Ceiba* fibre so remarkable for refrigeration insulation. By a patented process of "graining" done wholly by air, the fibres are all laid uniformly across the line of heat flow, 2,000 to the inch, each providing a block to the passage of heat and adding almost 40% to their natural heat insulating value. A batt is thus formed that is the last word in the advance of scientific insulation.

High Insulating Efficiency

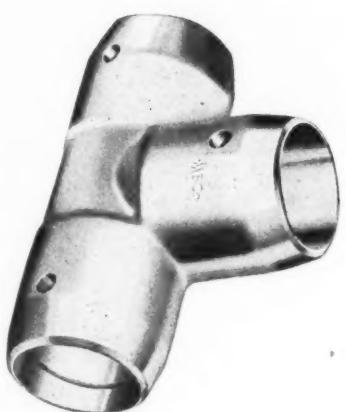
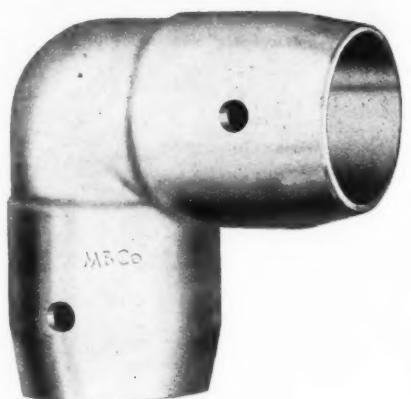
For use in electric refrigerators, the Dry-Zero batt is enclosed in the most advanced type of moisture-proof container made to fit exactly the walls, top and bottom of a refrigerator. In place, they provide permanently efficient insulation far superior to any other commercially available material.

Any refrigerator insulated with Dry-Zero will stand any scientific test and show a remarkable saving in operating costs even in the first two or three years, often amounting to as much as 60%. Dry-Zero assures economical operation for the life of the refrigerator.



THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN **DRY-ZERO**

Streamline Forged Brass Fittings In O. D. and Nominal Sizes for Mechanical Refrigeration and Air Conditioning



The increasing use of large capacity compressors and evaporators has created the necessity for non-porous fittings and hard drawn copper tube in suitable sizes for large suction lines. **STREAMLINE** forged brass fittings are now available in both types up to and including the 2 in. size.

General practice has demonstrated that much difficulty is experienced in making refrigerant-proof joints with flared fittings on production work. Soft copper tubing is extremely difficult to bend without kinking and the labor required to bend it actually costs more than the use of a **STREAMLINE** elbow and hard drawn copper tubing.

STREAMLINE forged brass fittings and hard copper pipe makes possible long runs without sags or kinks. A single straight tube of hard drawn copper now takes the place of multiple lines of parallel small tubes.

STREAMLINE fittings are space savers. No room is required for wrench grip or swing as is necessary with screw type fittings. Lines may be installed close to each other and connected in a minimum of space.

STREAMLINE forged brass fittings are much superior to castings. They have a dense close grained structure, are non-porous and will withstand enormous internal pressure. They are not affected by any of the refrigerants in general use.



Sectional View of the Joint

The use of **STREAMLINE** fittings assures permanently tight connections for electric refrigeration work. They are absolutely refrigerant and seep-proof. Vibration cannot work them loose. They form a connection actually stronger than the tubing—yet much lighter and more quickly completed. They reduce your fitting cost approximately 50%.

We manufacture a complete range of forged brass electric refrigeration valves and fittings and—better still, can make immediate shipment.

Send for our new catalog R-2

MUELLER BRASS CO.

Port Huron, Michigan

Patent 1,770,852
Patent 1,776,502
Patent 1,890,998

Other Patents Pending

COMMERCIAL REFRIGERATION

Retail Dairy Store Has Forced-Draft Unit, New Type Case

DETROIT—First local installation of the 1934 model X107 McCray refrigerated display case has been made in the retail store of the Premier Creamery Co. at 10214 Joseph Campau Ave., here.

Features of the new McCray case are the especially broad display shelf, new type of illumination by which the exterior lights, recessed under the display case top, are not visible but spread adequate light by means of special reflectors; and the massive, styled design of the case exterior.

The Premier Creamery Co. produces its own butter, which it sells at both wholesale and retail. In many ways setup of equipment in its place of business (which includes the retail store department) is a prime example of the application of advanced refrigeration equipment to the production, storage, and display of dairy products.

Installed to meet the refrigeration requirements of the Premier Creamery Co. is a 3-hp., 4-cylinder Kelvinator condensing unit.

For the butter manufacturing process, the refrigeration system furnishes cooling effect for the cold water which is necessary in the butter making operations.

Butter and other products for the retail departments are stored in an 8x10-ft. walk-in cooler. Refrigeration of the cooler is accomplished through a Kelvinator forced-convection unit, which is placed on the cooler wall opposite the door.

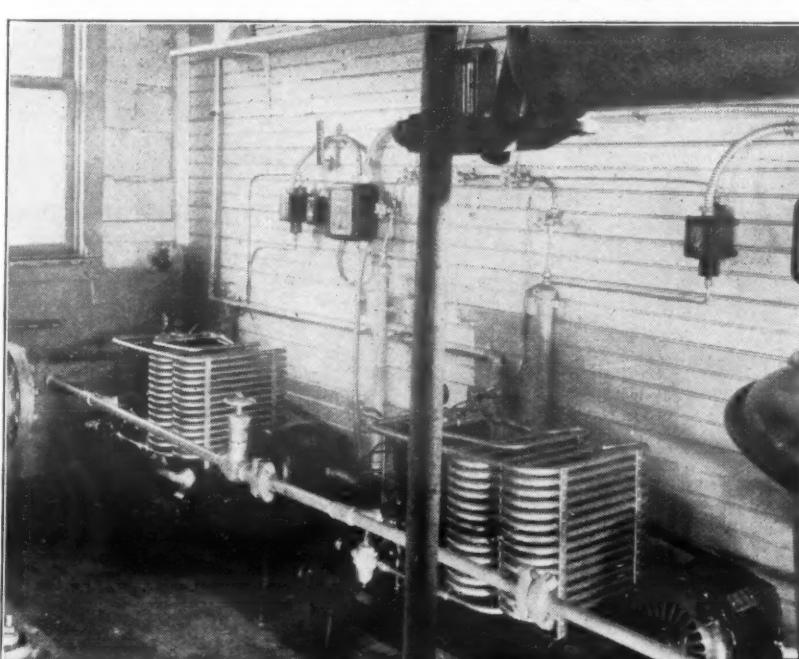
This forced-convection unit is made adjustable to varying conditions of temperature and humidity by a three-speed control on the blower fan. When lower temperatures are desired, the fan is turned to a lower speed, which is almost the equivalent to cutting out a section of the coil surface.

According to the management, the forced-convection unit has accomplished a number of things in the storage of dairy products hitherto thought impossible. Cheeses are found to keep their freshness and life with no tendency either to dry out or to become soggy with moisture.

The new McCray display case is equipped with special Kelvinator coils, and proper air circulation is accomplished through the louvred baffle which is adjunct to the coil at the rear of the case.

Low cost operation is a feature of the new refrigeration system. Where previously the cost of cooling the water for the butter-making operations alone was \$62 a month, the present power cost for operating both the production and retail departments is but \$13 monthly.

Universal Cooler Machines Handle Refrigeration Requirements for Complete Dairy Operation



WAYNE, Mich.—Two Universal Cooler 3-hp. condensing units have been installed in the plant of the Wayne Dairy Co. here for use in ice cream manufacturing and milk-cooling operations.

The two Universal Cooler units replaced obsolete equipment.

One of the condensing units operates in connection with a 400-gal. brine tank used in the ice cream manufacturing process. The same brine is circulated through coils in the milk storage box.

The other condensing unit is fur-

New Chicago Market Uses Frick Machines

CHICAGO—The Granville Cash Market at 1139 Granville Ave. here has recently been equipped with latest-type Frick refrigerating equipment for a complete layout of store refrigerator equipment.

Installation was engineered and made by the Midwest Engineering & Equipment Co., Chicago distributor for Frick products.

Refrigerator equipment in the market consists of a meat refrigerator 9x14x10 1/2 ft., a built-in freezer room 3x3x4 ft., 25 ft. of refrigerated display case with top and back bunker coils (5 ft. of which is convertible for fish display), and a refrigerated window 10x3 1/2x7 ft.

For the meat refrigerator and built-in freezer, a model FW1502 Frick combined water-cooled refrigerating unit with a 1 1/2-hp. motor has been installed.

For the display cases, fish case and refrigerated window, a model FW1002 Frick combined water-cooled refrigerating unit with a 1-hp. motor is furnishing the refrigeration.

Fin coils were furnished for all of the units except the freezer, in which was installed galvanized steel pipe coils. There are a total of eight Detroit Lubricator thermostatic expansion valves used in the installation. A two-temperature valve was used on the line running to the freezer.

Novel Boston Hotel Bar Is Frigidaire Equipped

BOSTON—Champagnes, sparkling wines and charged waters are kept at proper temperatures in the original "Merry-Go-Round" bar in the Copely-Plaza hotel here, which was created by Arthur L. Race, managing director of the hotel.

The bar is designed in the fashion of a carnival merry-go-round, with a hurdy gurdy to furnish the music. An electric motor turns the bar and furnishes power for the hurdy gurdy, which is connected to a loud speaker in the center of the bar. Tables are arranged around the raised center circle at which 40 persons can be served. In the room proper there are tables for several hundred others.

Over the bar is a huge red canopy, indirectly lighted. The bar is decorated in a modernistic combination of red, black and silver. Walls of the room depict cafe scenes. Yellow tablecloths cover the tables grouped around the bar. Chairs are bright red and black.

All the refrigeration equipment has been installed with the moving, circular bar.

Universal Cooler Machines Handle Refrigeration Requirements for Complete Dairy Operation

nishing refrigeration for a 400-gal. capacity hardening room which is kept at a constant temperature of -10° F.

A brine aerator is in use at the present time but is being changed to a direct expansion system employing a Cherry-Burrell deluxe cooler capable of handling 1,200 lbs. of milk per hour and lowering the temperature from 62° F. to 38° F.—the milk being precooled to 62° F. by water.

Operation of all the various refrigeration systems is completely automatic.

Lindahl Says Restrictions on Instalment Selling Work Hardship on Larger Case Manufacturers

Commercial Refrigerator Mfg. Co., Ltd.
1020 East 58th Street
Los Angeles, Calif.
Feb. 1, 1934.

Editor:

After about six months experience with the Commercial Refrigerator Manufacturers' code, we are running into many obstacles that have a tendency to make its 100 per cent operation null and void. We were among the first to put the code proposed last summer into execution, long before it was signed by the President.

The purpose of the code, we were led to believe, was primarily for the purpose of increasing employment and the rate of pay. The 100 per cent performance of the code as written actually operates to the detriment of the employees, for the following reasons:

Small Firms Have No Overhead

1. In the territory west of the Rocky Mountains we are blessed with between 60 and 70 small, one-man cabinet factories. The owner of the plant is the "Captain, Chief Engineer and Deck Hand." In other words he is the whole works. He makes the sale, builds the refrigerator, delivers it and collects the cash.

He is not operating under any overhead, but usually has his plant in his back yard or in some other low overhead location. He does most of his work with hand tools, and thus does not require production machinery. He will make a refrigerator display case at a cost (labor and material) of \$200.00 and sell it for \$250.00—and in many instances has been satisfied with \$200.00, which just covered his labor and materials.

A regular manufacturer cannot compete with this kind of competition, even though he is very efficient. The savings in overhead alone, of the small manufacturer, is usually more than sufficient to make up for his small buying power and his lack of efficiency. He does not hire an auditor, sales manager and sales force which in most commercial refrigerator plants costs from 25 to 30 per cent of the selling price. He does not need to stand back of service, because he sells at such a low price that he can demand cash—and get it.

If the equipment goes bad it is just hard luck for the buyer. If most of his equipment goes bad he merely leaves town and opens up in another town and begins all over again, as he always will find price buyers who care nothing for reputations.

The volume of each individual manufacturer in this class runs from \$10,000 to as high as \$75,000 per year, not sufficient to be interesting, but multiplied by 60 or 70 it runs into quite a sizable dollar volume per year.

We do not know whether this condition is typical of the eastern portion of the United States or not, but it certainly is true in the west. What provision does the code make to bring these small fellows into line? They are not manufacturers in a general sense, as they are merely selling labor and yet, the combined sales of these small fellows would be very attractive business for the largest manufacturer.

Large Manufacturers Grant Terms

2. This leaves the bulk of the large manufacturers' business to individuals who require credit or terms. The large manufacturer can secure this term business because he can sell on long time terms, accept low down payments, and market a product that is backed by service and a good name for efficient and economical performance. Even the buyer admits that the product of a reputable factory is worth more than one made by hand in the backyard, but with too large a difference in price, he will take the inferior article, even though he has to pay cash.

Now let us analyze the situation with respect to instalment buying: If the buyer has to pay too large a sum as a down payment he may just as well raise a little more and buy the cheaper product, therefore if the terms are too stiff the buyer either does this or defers his purchase until such time as he is able to conveniently let go of the cash required.

Anyone acquainted with the average retailer will tell you that 95 per cent of them never build up any surplus. They live from hand to mouth, and when two or three hundred dollars is accumulated the wife gets it for new clothes or a new car or other things.

The net result to the manufacturer of a high down payment is loss of immediate volume. This means less men employed in the factory, less goods purchased from raw material dealers and less power consumed. Also, as volume declines due to stiffer terms, field sales resistance is increased. Increased field resistance makes selling harder and sales are fewer apart.

Earnings of the salesmen are curtailed to such a point that he is unable to operate his car and make a living. Therefore, it is up to the manufacturer either to lay off his sales force or to increase the rate of commission. Obviously, laying off the sales

force means a complete shut down of the factory and the only thing to do is to increase the rate of commissions.

Can the factory increase the sales price to cover increased cost of selling? This is very difficult. Even if the large manufacturers get together and arbitrarily raise the prices they are kidding themselves, as the small manufacturer is still to be reckoned with.

Repossessions Hurt Large Firms

3. Repossessions: During 1932 and 1933 repossession in commercial refrigeration reached such a point that national finance companies refused to handle this type of paper unless endorsed by manufacturers of exceptional strength. In some parts of the country the repossession figures ran as high as 30 per cent.

The small manufacturer was not hit by this because he had always sold for cash or one-half cash and balance in six months. The large manufacturer bore the brunt of this heavy loss. In many instances these accounts were in the hands of the finance companies and the demands of finance concerns threw the manufacturer into receivership.

This unusual repossession figure was caused principally by too low down payments to irresponsible individuals. This glutted the market with used merchandise and the sales of new goods suffered proportionately.

I have no quarrel with the labor provisions of the code, because only good can come out of these provisions. However, we do not believe that the clause on trade-ins, length of time the contract runs or the down payment should be at a fixed rate. The down payment as well as the term of the contract should be left to the discretion of the manufacturer and his financial ability.

Sometimes it is better to accept a sale from a reliable retailer on a small down payment and long terms than it is to demand a high down payment and short terms from unreliable retailers. Therefore, the question of terms and conditions should be left to the credit department and not to arbitrary code ruling.

If the commercial refrigerator manufacturers do not wish to curtail their own production and sales they should leave this to the decision of the individual manufacturer.

The more liberal that terms are, the greater price can be secured for an article, and it is to the interest of every manufacturer to make his terms as liberal as possible to induce large sales. Large sales mean large production, and large production means quantity buying of raw materials and labor and, after all, that is the primary purpose of the N. R. A. codes.

It seems to us that the labor provisions of the N. R. A. codes are in the main nullified by the supplementary "code of ethics" which superintendents conditions and terms that act to retard production and sales. With production limited the labor provisions of the code do not mean anything as there will not be any labor needed.

We are interested in obtaining opinions of other manufacturers, dictated by the locality in which they operate, various types of competition and other factors.

GEO. R. LINDAHL,
Vice-Pres. Director of Sales.

Cory Will Head Sales For Creamery Package

CHICAGO—C. M. Cory has been named general sales manager for the Creamery Package Mfg. Co. here.

Mr. Cory, who has been with Creamery Package since 1905, was formerly manager of the Kansas City branch office. He will be succeeded at Kansas City by H. T. Howard, formerly manager of the company's office at Minneapolis.

George C. Anderson, formerly assistant branch manager at Chicago, has been named manager of the Chicago branch office.

Brunswick Appoints Four Distributors

CHICAGO—Brunswick-Balke Collender Co., manufacturer of bar equipment, has recently added four new distributors to its field organization.

The new distributors are Witte Hardware Co., St. Louis; Kelvinator Bridgeport Sales Co., Bridgeport, Conn.; C. T. Patterson Co., New Orleans; The City Ice & Fuel Co., Miami, Fla.

Minneapolis Firm Resumes Operations After Fire

MINNEAPOLIS, Minn.—Minneapolis Showcase & Fixture Co., manufacturer of refrigerated display cases, is planning to resume operations again in the near future, after having lost its plant at 197 E. Island ave. here last month in a fire.

Display Cases by

Seeger

SAIN T PAUL



The Seeger Refrigerator Company presents a complete line of Modern Display Cases, equipped with diffusion shelf evaporator coils. The line consists of Single and Double Duty Display Cases—also Full Vision Display Cases. Styles in various lengths. All Display Cases by Seeger are sold through Dealers and Distributors of Electric Refrigeration.

The diffusion shelf evaporator coils produce uniform, low temperature, are self defrosting with correct humidity, preventing losses from shrinkage and trimming. They have been selected as best suited for the purpose by experienced Grocers, Meat Dealers and Delicatessen Dealers and are connected ready for thermostatic expansion valve and compressor attachment, which are furnished by Electric Refrigeration Distributor.

Seeger Display Cases have every modern improvement and convenience for the sale and preservation of food—many of these improvements are exclusive and patented by Seeger. The Case Exterior is of white porcelain with pleasing green design, and black porcelain base. The interior is also of white porcelain—all porcelain used being "Seeger Made." The entire Case is adequately insulated. The Display section has three thicknesses of $\frac{1}{4}$ inch plate glass, rubber sealed and Seeger processed to prevent fogging (patent pending), a proven development exclusive with "Seeger Made" Cases.

For detailed information on Seeger Display Cases, or any type of Commercial Cabinets, write

SEEEGER REFRIGERATOR COMPANY

SAINT PAUL, MINNESOTA

New York — Los Angeles — Chicago — Boston — Buffalo
Philadelphia — San Francisco

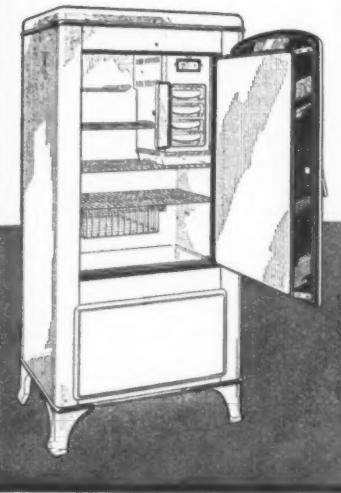


A TRIPLE SERIES LINE

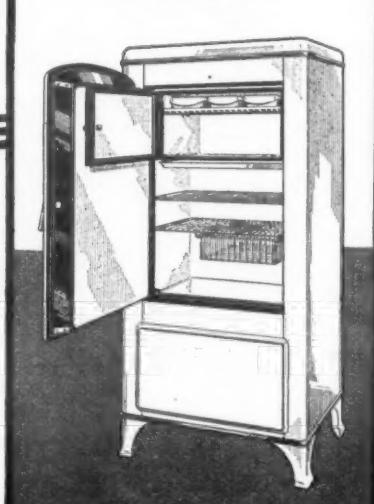
8 Beautiful Refrigerators . . . *All Air-Conditioned* . . .
Strictly competitive in Price

*... with a 3-WAY
approach to the SALE*

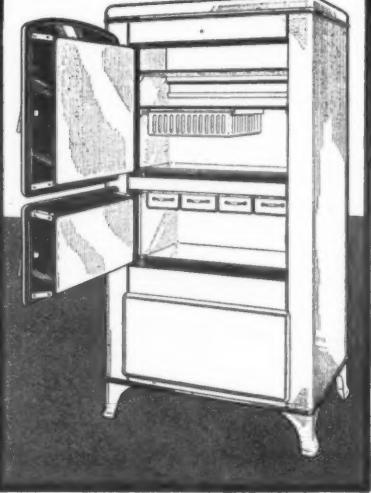
Series 1
for
CONSERVATIVE
BUYERS



Series 2
for
PROGRESSIVE
BUYERS



Series 3
for
DE LUXE
BUYERS



In addition to Air-Conditioning, Potter Refrigerators incorporate two other important exclusive features: SUB-ZERO FREEZING . . . which provides, by many degrees, the coldest freezing temperatures available in household refrigerators; and in series 2 and 3, Near-Zero FROZEN STORAGE . . . a commodious compartment (ranging in size to a bushel and a third capacity) for the prolonged storage of "freezable" foods, and for quick-chilling service. This compartment opens up a new realm of refrigerator usefulness in the efficient and economical handling of foodstuffs, not even remotely approached by any other refrigerator.

EVERY modern system of commercial refrigeration incorporates Air-Conditioning, which manufacturers declare is a basic essential in effective food preservation.

But, only in the Potter, has Air-Conditioning been successfully applied to household refrigeration. The design under which this has been accomplished is exclusive, patented, protected.

The immeasurable benefits of AIR-CONDITIONED Refrigeration can be gauged by its results: Dehydration is reduced virtually to the vanishing point . . . foods stored for seven to ten days show no perceptible loss of moisture or freshness.

Periodic shut-downs for defrosting of the cooling coil is totally abolished. Foods which under ordinary refrigeration spoil rapidly can be safely stored for days. No hydrating containers are necessary. The usefulness of the refrigerator is multiplied.

In the past, AIR-CONDITIONED household refrigeration has been confined to a group of Potter Refrigerators above the price level of conventional designs. *This year, through a significant and timely engineering accomplishment, Air-Conditioning has been provided in all Potter Refrigerators . . . to meet every buying disposition and all classes of budgets.*

Potter AIR-CONDITIONED Refrigerators are available in a "triple series line" . . . a complete range of styles, sizes and prices to fit the needs of Conservative Buyers, Progressive Buyers and those of DeLuxe preference.

Even with closed doors, Potter Refrigerators, by their architectural beauty arrestingly declare themselves as being superior in quality to the rank and file of household refrigerators. Open the doors, and they advance, alone among refrigerators, into a field of service not even remotely approached by any other refrigerator built today.

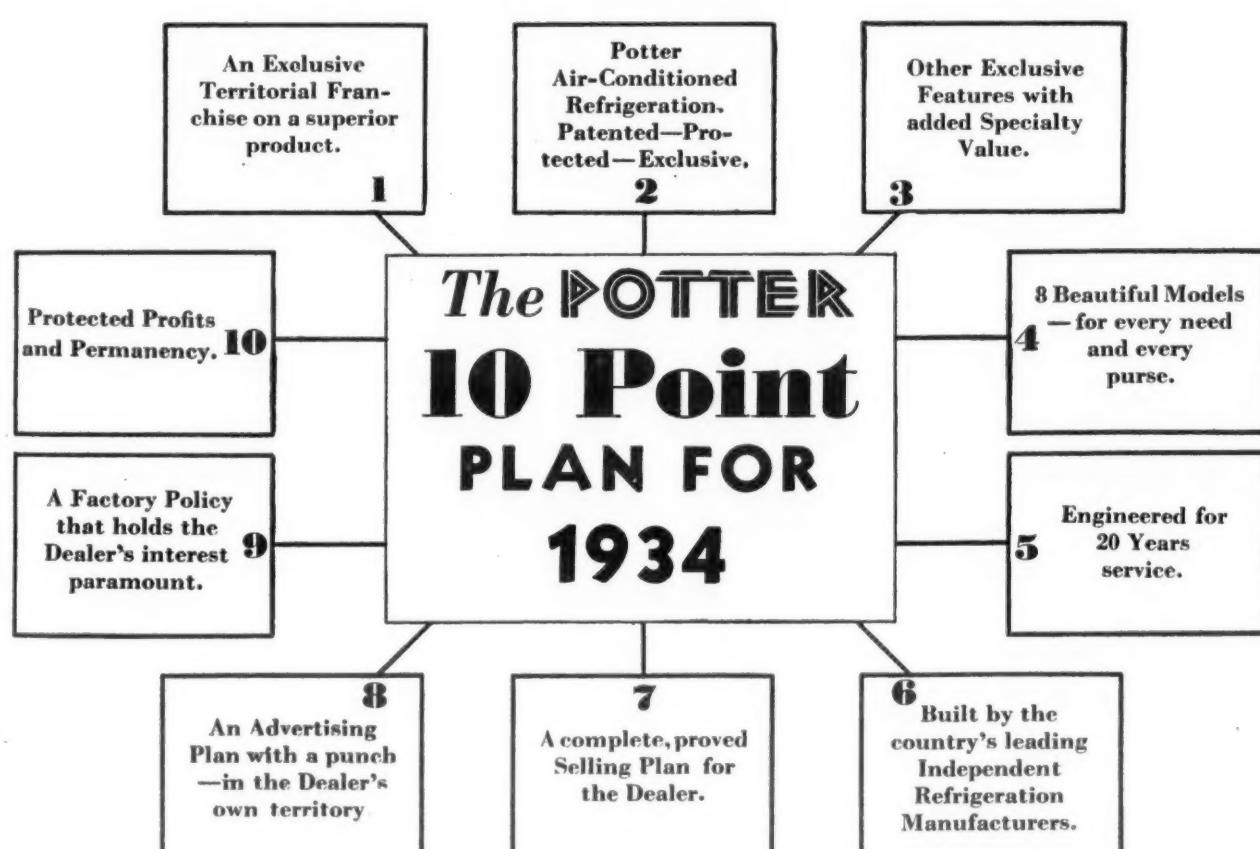
They offer the customers of Potter Dealers a totally new utility in the preparation and preservation of food.

PROSPERS AGAIN!

... after Air-Conditioned Food Preservation made available
old refrigerators at conventional refrigerator prices.

Dealers outlets to be established with an exclusive franchise,
and an incomparable product.

300 NEW DEALERS TO OPERATE UNDER this PLAN



ALL indications point to 1934 as refrigeration's biggest year for the manufacturers. Yet if history repeats itself, few dealers will find themselves with a real profit on their books at the end of the year.

With the chaotic competitive conditions existing today, what are YOUR chances of reaping a worthwhile reward for your sales effort this coming season?

Are you selling a product and have you a franchise with which you can face the coming season confident that your share of the profits is going to be in proportion to your investment and your work?

Can you feel sure when you build up a prospect to the point of buying that no one else can intrude with unfair tactics, close the deal, and deprive you of the sale?

Can you offer your prospects something they can get nowhere else?

Are you satisfied with your present outlook for a future with permanency and profits in the business of refrigeration?

★ ★ *

If you want an answer to these questions . . . then you'll want complete details of the Potter 10 Point Plan. Send for "300 Shall Prosper".

POTTER REFRIGERATOR CORP.
BUFFALO, NEW YORK

Send for this Portfolio!

32 Pages of Arresting
Information



Whether or not you are ready for the Potter Proposition, you should read "300 Shall Prosper!". In addition to its complete presentation of the Potter 10 Point Plan; it embodies a searching disclosure of present conditions and a frank discussion of those perplexing profit-problems faced by the majority of refrigeration dealers in business today. It will be forwarded at once to any dealer or distributor requesting it on his own letterhead.

ELECTRIC REFRIGERATION NEWS

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The Newspaper
of the Industry



Written to Be
Read on Arrival

Published Every Week by

BUSINESS NEWS PUBLISHING CO.

550 Maccabees Building, Woodward Ave. and Putnam St.
Detroit, Michigan. Telephones: Columbia 4242-4243-4244-4245

Subscription Rates—U. S. and Possessions and all
countries in the Pan-American Postal Union: \$3.00 per year;
2 years for \$5.00. Canada: \$6.00 per year (due to special
tariff). All Other Countries: \$5.00 per year (U. S. Money)

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VOL. 11, NO. 8, SERIAL NO. 257, FEBRUARY 21, 1934

Wary Consumers and the Retail Merchant

ONE of the most interesting duties attached to the management of any publication is reading the mail. Answering that mail can also be one of the most bothersome and perplexing of the tasks assigned to the editors. And some fine points of business ethics and philosophy are often involved. Consider this one:

Mrs. Lewis W. Colwell
4140 No. Springfield Ave., Chicago, Ill.
Feb. 13, 1934.

Gentlemen:

As a subscriber of Consumer's Research I noticed your name as a refrigerator reference. I enclose 10¢ for Electric Refrigeration News—issue of March 22, 1933.

Can you give me any data as to the reliability of "Trupar" made in Dayton, Ohio, carried by Marshall Field & Co.? It is one I am considering purchasing, but would like more data as to the maker, etc.

Mrs. L. W. Colwell.

Although ELECTRIC REFRIGERATION NEWS likes to be considered as an intra-trade authority on electric refrigeration, we have never set ourselves up as divine oracles to the general public on the subject. A letter of this sort, then, seems a little out of our line.

And just how should we answer it?

Should we say that the editors have played "99" and other nefarious games with Trupar's new president, R. O. Cunningham, and have high respect for this Scotch financial man's integrity and perspicacity? Should we mention the fact that we've known and liked Bill Myers, second in command, for a period of years? Should we tell her that President Cunningham is cleaning house over in Dayton and going in for a bit of reorganizing?

We might mention that it has been a long time since Trupar did any advertising in ELECTRIC REFRIGERATION NEWS, and that normally any active refrigeration manufacturer is pretty regularly represented in the advertising columns of the paper. We should immediately be accused of bias if we made an answer of that sort, however.

Perhaps we could tell her that our engineering editor thinks highly of Trupar's chief engineer, and that he thinks the Trupar unit is a good machine. That, however, would be just One Man's Opinion. The more we think about it, the more we wonder how we can be of much help to Mrs. Colwell. Even if qualified, how could we advise her?

The moral to all this self-examining soliloquy should be obvious to any good refrigeration dealer. Best place for a customer to go for information regarding a product she wants is a local merchant in whom she trusts and for whose judgment she has respect.

In other words, if the fact that Marshall Field & Co., one of the biggest and best-known department stores in the entire nation, sells Trupar refrigerators is not sufficient recommendation for Mrs. Colwell, we do not see how she can gather much solace or guidance from the opinion of an editor, of whom she has never heard, of a paper she has never seen.

It was on the reliability of the goods he had for sale—and the good judgment of his buyers—that the late Marshall Field built his business. Similarly, good merchants in every town have established their reputations and maintained their clientele by picking good products to sell.

The New Deal has a glorified place for the Consumer in its set-up, and has created quite a stir over the business of protecting buyers from skinflint manufacturers (the Tugwell bill is a case in point). New Dealers have let it be known that the old theory of *caveat emptor*—"let the buyer beware"—is definitely out, through finished. Organizations like Consumer's Research have been given new standing and a brighter halo almost overnight. And prospective buyers like Mrs. Colwell are now looking for oracles, for Supreme Courts of Buying, to guide their purchasing.

Chief justification of the independent retailer in the economic scheme is the incontrovertible fact that (if he's a good retailer) he knows both the needs of his customers and the attributes of his products. He is able to select a product which best fits his particular market, and once he has chosen his line, he stands back of it with all he has. He knows that if he satisfies a buyer once, that buyer is likely to come back to him. If the buyer is dissatisfied with his purchase, he'll probably go elsewhere next time.

Marshall Field & Co. should be vastly more interested in keeping Mrs. Colwell as a satisfied customer than in making a one-time sale of a refrigerator to her. Hence the fact that they are desirous of selling a Trupar refrigerator to her should indicate that they believe it will give reasonable satisfaction.

Restoring confidence is said to be one of the major objectives of the New Deal. We know of no better way to maintain confidence in manufactured articles than by leaving judgment on their merits in the hands of established retail merchants who value their standing in their respective communities. Any other way seems likely to lead to confusion, nervousness, and mistrust.

If Marshall Field sells it, Mrs. Colwell, it should be reliable. If not, then it would appear that something is radically wrong with the fine old establishment of Marshall Field & Co.

WHAT OTHERS SAY

Europe Eyes the New Deal

AS I said at the outset of this article at the beginning of the New Deal, Europe followed the experiment with a great deal of sympathy. What is now the impression of European men of affairs regarding what is happening in the United States? I wish to be frank and truthful. Almost everybody thinks that, after a brilliant start, the experiment is now encountering serious difficulties. Some regret this, others are delighted, because the New Deal appeared to them to be of Socialistic inspiration, and if it had succeeded, they were afraid of the repercussion which this success would have in Europe.

What are the reasons, according to European specialists, why the New Deal does not appear to be succeeding as well as the friends of America would have wished? First of all, it seems to them that the decisive characteristic of the beginning of the regime has not lasted to the same degree. The President's first radio speeches to the American people had aroused the enthusiasm of many European readers because of their clarity. Subsequently, it seemed as if rival advisers were pulling the New Deal in opposite directions. In order to restore confidence, nothing is more valuable than certainty. Inflation or deflation? Either of these methods can be chosen, but one must be chosen. Europe would like to know exactly what are the intentions of the American government.

Further, European specialists are afraid that the federal government of the United States, having assumed too few responsibilities in the last 50 years, is now trying to assume too many. In their view, greater elasticity should be granted to economic movements. Above all, industrialists and producers should not be given the impression that the government is unfriendly to them. The object is that they shall work and buy. In order to achieve that object, cordial collaboration with them is indispensable.

At the beginning of the New Deal they showed great enthusiasm. I remember being present, when I was in America, at the discussion of the cotton code under the chairmanship of General Hugh Johnson. Then the industrialists gave evidence of their sympathy with the New Deal. Were they not later unjustly treated, when so many regulations were imposed upon them that they could not carry on?

"One should never govern too much," thinks Europe, with her long experience. "A good government makes few laws, and the simplest laws are the best." And certain Englishmen recall Mr. Balfour's statement: "The wise man deals with problems in a prudent and moderate spirit, always with a deep consciousness of his feeble power of foresight and of the narrow limits of his actions."—Andre Maurois in *The Rotarian*, February, 1934.

LETTERS

Oil Burners

Automatic Burner Corp.
1823 Carroll Ave., Chicago

Editor:

I have just read the editorial on Oil Burners in the January 31st issue of ELECTRIC REFRIGERATION NEWS.

I believe that this is going to do more toward promotion of the sale of oil burners through specialty distributors than any article that has yet been published, and I wish to compliment you on the way it is written.

In the fall of 1930 you had an eight page section on the possibilities of Oil Burners. Would it be possible for you to get me a copy of this?

JOSEPH HIRSCH,
Vice President.

Automatic Burner Corp.
1823 Carroll Ave., Chicago

Editor:

My attention was directed to the editorial in your issue of January 31st.

I do not think I am overstating the fact when I say that this editorial will do more to interest the specialty distributor and retail dealer than anything that could be said or done. I congratulate you on your splendid conception of the circumstances.

J. H. HIRSCH,
President.

Krich Distributing Company
558-560 Broad Street, Newark, N. J.
Gibson Refrigeration and
A.B.C. Oil Burners

Editor:

I wish to commend you on the editorial which appeared in the January 31st issue of your paper.

Being very much interested in lending every support to the building up of the oil burner picture and also feeling most definitely that it is the next most important household appliance for dealer's sale, I cannot miss the opportunity in thanking you for your effort.

MAX H. KRICH,
General manager.

Sam S. Glauber, Inc.
East 79th St., New York City

Editor:

Those two little words "Oil Burners" sure hit the eye on the editorial page.

Well, we beat you to it. We signed up with the "Fluid Heat" only two weeks ago. Our connection in the industry seems to be the exception to your theory. We are, and have been for 38 years, a plumbing and heating supply distributor. We cater to the plumbing and heating trade. We have sold on an average over 5,000 household units per year. True most of the sales were direct with our own force; yet there were some plumbers who made good money selling Mayflowers.

Last year with the upturn in business and stabilized prices we entered the commercial refrigeration field. We did fairly well, and expect to do better. It is in the commercial field that you get similarity of equipment between oil burners and refrigeration. Installation is almost alike; electric wiring and controls are very similar. Like refrigeration, you must install it right to have it work right.

A. S. PENT.

ABC Oil Burner Sales Corp.
2023 North Charles St., Baltimore

Editor:

It is with a lot of interest I read your article of Jan. 31 and I wish to take this opportunity of complimenting you on your farsightedness and am glad that you feel the way about it that you do. I am sure it is going to be a big help toward the end that we are striving.

Should you have an occasion to visit Baltimore at any time, I shall look forward to a visit from you.

CHAS. I. WEILLER,
Manager.

Bureau of Standards Will Continue

Department of Commerce
Bureau of Standards
Washington

Editor:

We are pleased to announce that it has been decided to continue the simplification and commercial standards work at the Bureau of Standards, in cooperation with the American Standards Association and other organizations and groups concerned with such work. The work has an added importance at this time because of the need for reference to standards of dimensions and quality in the N. R. A. codes for fair competition.

In order to provide maximum benefits for the ultimate consumer, the Bureau, in accepting simplified practical projects, will give priority to those in which the producer groups will signify, in advance, their willingness to

identify simplified items in their catalogues and other trade literature.

Similarly, in accepting commercial standards projects, the Bureau will give priority to those in which the producer groups will indicate, in advance, their willingness to employ labels on the product, constituting binding guarantees of compliance with the standards set up in order that the maximum service may be rendered to the consumer in over the counter trade.

LYMAN J. BRIGGS,
Director.

We Expected This

Frigidaire Division
General Motors Corp.
Dayton, Ohio, U.S.A.

Editor:

If the terrible tempered Mr. Bang, shown in Fontaine Fox' cartoon in your current issue had been smart and purchased a 1933 Frigidaire, he wouldn't have had to take a two-by-four to get ice cubes for his drink. And since he wouldn't have lost his temper, his name "The Terrible Tempered Mr. Bang" would have become, "The Happy and Contented Mr. Smile." For Frigidaire automatic ice tray release is a sure protection against lost tempers.

J. W. IRWIN.

Department Stores

4537 Emerald Avenue
Chicago, Illinois

Editor:

Mr. John Knapp, vice president of Norge, in Jan. 10 issue of ELECTRIC REFRIGERATION NEWS, stated:

"Department stores during the past 18 months have been having difficulty in specialty merchandising and will continue to have trouble unless they adopt merchandising principles which make specialty selling successful."

But just who is responsible for the difficulty? Remember most house furnishings buyers are experts on so-called "pots and pans" not specialty-minded, and must rely upon their factory contracts for aid on high ticket merchandising.

Recently I concluded an investigation sponsored by the president of a large Chicago department store which handles three makes of refrigerators, eight makes of washers, eight makes of cleaners, four of radios.

The three factory contact refrigeration men (dandy fellows) absolutely did not render any real specialty assistance. Their work began and ended with the selling and keeping sold of the department buyer who, as in most cases, was not a specialty man.

Shopping their stores as well as every other Chicago larger department store, it was mighty easy to put off the "buy" with the simplest excuses. The floor men were easily awed and, while they knew their mechanics, they were found lacking in elementary salesmanship. Very few closers were found. . . names of prospects not taken and no outside selling being done.

Calling in two of the refrigeration factory contact men, I found both unable through lack of experience to furnish the missing sales punch. Both promised to get help from the factory but never did. The other refrigeration expert I didn't bother because he was not of the merchandising type.

One washing machine contact man, unable to help, claimed his factory opinion was: "Nearly every one selling washers was an old timer who would resent suggestions."

The radio man (national advertiser) didn't have a thing on the ball when it came to my real problem, *Inside and Outside Selling, Just a wholesale man, that's all!*

My attempts to secure factory cooperation were simply to show how lacking these contacts were and just who was responsible for the conditions I found. This assignment was purely and simply analytical.

Prior to this last assignment which ended January 1st, 1934, I was in business for myself, selling promotional numbers to house furnishings buyers. Checking with many buyers I found almost the same condition as in Chicago. Many were willing to exchange representation for a contact able to supply the cooperation lacking.

Where is that merchandising type factory man so prevalent in the earlier days of refrigeration, when we set a fellow up in business, studied his local problems, helped him plan his advertising, hired and trained his men, went out and helped close his leads and frequently contacted him, fairly living and breathing with his staff? Curtailed factory budgets probably the answer.

Department stores welcome high ticket or volume selling. Many were sinned against by being sold merchandise with a bad after-sales service. A lot grumble today because of discounts and not making any money. But they are an important factor because of their huge floor travel, prestige and advertising methods.

They are the answer to the manufacturers' prayer for lower selling costs. And are surely worth organizing.

LAWRENCE M. KEAN.

BOOKS

"Distribution Today"

Author: O. Fred Rost. Publisher: Whittlesey House, McGraw-Hill Book Co., Inc., New York City. Publication date: Nov., 1933. Pages: 213, with appendix and index, 355. Price: \$3.

In view of the current bewilderment over the course of business under the policies shaped by the "New Deal," Mr. Rost's work on distribution would seem to be most opportune. Published in November, 1933, the text indicates that the author, who is marketing editor of *Business Week*, has had some chance, at least, to survey the probable effects of the codification of industry upon the future of distribution.

One of Mr. Rost's general conclusions is that "it is generally recognized that while the National Industrial Recovery Act is fundamentally a measure aimed at the reduction of unemployment it may well register its most profound and lasting benefits through improvement of the distribution practices of the various industries."

Reason for this, the author points out in his chapter on "Factors in the Cost of Distribution" is that codification of industry will necessarily force a shift of competitive activities from the productive to the distributive branches of business. Profits will thus accrue more readily to the manufacturer who has the most efficient and economical system of distribution.

With respect to pricing policies and price fixing, Mr. Rost predicts (and current news dispatches are bearing out his prediction) that the NRA will not sanction the adoption by industry generally of an announced policy of

price fixing, nor will it permit the inclusion of broad provisions for such practice in any industrial fair-practice code.

However, the author points out that the administration has recognized the need for a framework around which business might build a structure of higher and stabilized prices, and has concluded that the open-price plan provides at least one type of framework, thus approving the Nema code for the electrical industry with the idea that its open-price clause might become a pattern for other industries.

Legal and general aspects of the open-price plan, the basing point plan, and the "right of refusal to sell" (manufacturers to retail outlets) as an effective means of preventing disastrous price cutting are discussed in some detail.

Mr. Rost has devoted special chapters to the various functions in distribution, such as wholesaling, retailing, etc. Wholesalers who probably haven't given much thought to their mission in life will no doubt be heartened by Mr. Rost's assertion that their processes of handling, transportation, warehousing, etc., have become increasingly indispensable.

Wholesalers, the author declares, have also learned how the goods which they sell at wholesale should be retailed to the consumer, and many have become expert merchandisers. Through their own sales forces they are now educating retailers in the art of profitable merchandising.

With respect to the independent retailer, Mr. Rost believes that those who have survived are in a stronger position than they have ever held in the past, because in order to survive they have had to dress up their stores and better their service.

By way of example, the author points out that today hundreds of hardware stores are as well arranged, as brilliantly lighted, as clean and inviting as any department or chain store.

"Immobility of fixed charges" will retard future expansion of department stores, Mr. Rost believes, but the service functions (delivery, credit, return

privileges, adjustments) will serve as the media by which department stores of the type known today will preserve for themselves a definite place in the distribution of consumer goods, although in the author's opinion they will get a decreasing percentage of the total volume of all retail sales.

While the department store as a factor in retail sales volume is on the decline, the comparatively new mail-order retail stores are due to get an increasing percentage of the business, says Mr. Rost in a chapter in which he traces the growth of mail-order retail stores.

One of the most interesting chapters in the book, from the standpoint of one familiar with distributing methods in the electric refrigeration industry, has to do with "The Canvasser." The author has compiled some rather significant statistics which would indicate that canvassing has become less and less effective through the years of the depression.

However, Mr. Rost believes that this situation is an outgrowth of depression times; that the thousands of unemployed who took up canvassing as a possible way out and who annoyed housewives to desperation, will be reabsorbed by the increasing industrial activity, and only good canvassers left to ring doorbells, with the result that this type of sales activity may recover its good name.

Proponents of selective distribution will find a friend in Mr. Rost; he points to it as the main policy by which business can operate with profit to all, and one by which many of the factors that go to make up the much discussed "waste in distribution" can be eliminated.

The appendix to "Distribution Today" is made-to-order for anyone engaged in the electrical industry. It includes the complete code of fair competition for the electrical manufacturing industry, as well as the text of the National Industrial Recovery Act and the code for the retail trade. Another document of interest is the model "Wholesaler's Consignment Contract" in the chapter on "Consignment Selling."

"Steps to the Order"

Author: J. C. Aspley. Publisher: The Dartnell Corp., 4660 Ravenswood Ave., Chicago. Publication date: 1934. Pages: 128. Price \$1 with board cover, \$1.50 with leatherette cover.

EVERY man new in specialty selling would profit by reading this pocket-size volume, and nine out of 10 veterans could do a lot worse than spend an hour and a half brushing up on some of the selling hints Mr. Aspley has transplanted from his collection of sales manuals to this publication.

It does not attempt to cover, or even touch upon, all phases of selling; it is one of a series of Dartnell manuals which treat the subject in its entirety. Rather, it outlines the actual mechanics of order-getting, and suggests ways of taking those steps most successfully.

Most worthwhile part starts with Chapter 3 and runs through Chapter 9. Other four chapters, while interestingly written and neatly organized, are composed chiefly of generalities on successful salesmanship found in most good manuals today. They do, however, warrant thorough perusal, particularly by younger salesmen.

But the seven chapters specifically referred to are crammed with pertinent pointers on sales technique, each chapter dealing with one. Building a foundation of facts before making a sales approach is the first, and Author Aspley tells what to find out about the product, the prospect, his needs, and his business.

On "Selling Yourself," he says: be a gentleman, be healthy, interest yourself in others, make a genuine study of your customers' needs, be sincere. Then he gives in detail the why's and wherefores of this advice.

In presenting the sales proposition, one chapter says, the salesman should undoubtedly follow the orthodox steps of attempting to get attention, arouse and hold interest, create desire, and secure action, but adds that all this will take care of itself if the salesman

has a plan, knows his product, and understands his prospect. Best part of this chapter is a list of suggestions for holding attention and getting points across.

Necessity for proof of statements in a sales presentation gets some space in the book, too. In this discussion, Mr. Aspley makes some keen comparisons of instances where proof should be given, and where it should not. Ways of disposing of objections are suggested in another section.

Theme of the manual's instruction on getting the order signed is, "Be courteously aggressive," and for many salesmen, the chapter on that subject should be the most valuable of them all, because of both the topic and the book's treatment of it.

The author pooh-poohs the idea that there is but one proper time to ask for an order. A salesman must help his customer make up his mind, must not be afraid to ask for the order, nor should he ask questions that can be answered with "no."

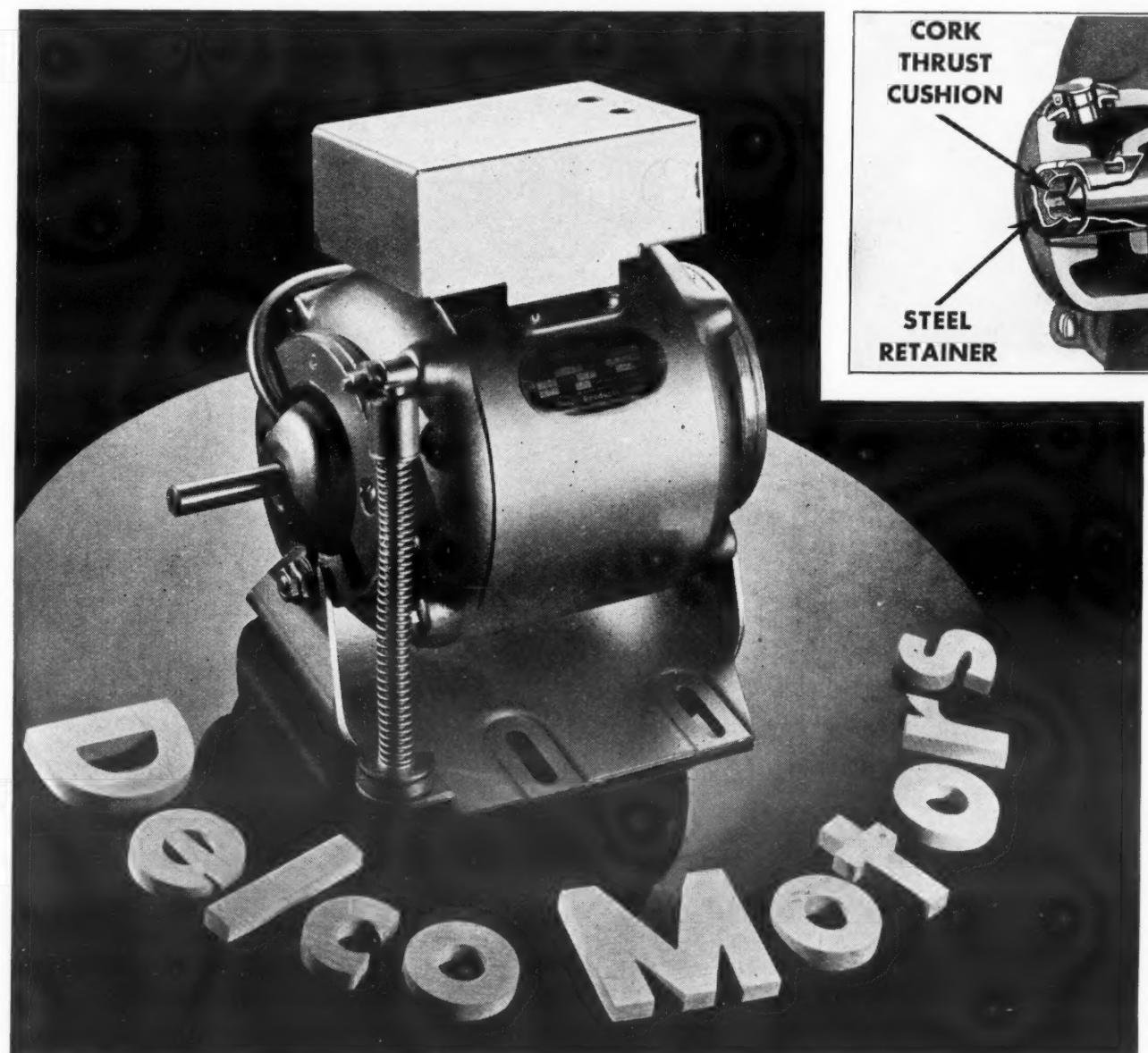
If the build-up is right, the order-signing time will come along without the salesman's having to strain himself watching for the much-mentioned psychological moment.

Another chapter suggests ways in which a salesman may make a slip, and consequently lose an order. It is pointed out that by analyzing each lost sale, a man may discover his selling weaknesses and correct them. The book goes further than suggesting that this be done by showing how it may be done.

Stanley A. Dennis Joins Advertising Agency

CHICAGO—Stanley A. Dennis has been appointed manager of the business paper division of Blackett-Sampson-Humart, Inc., advertising agency, with headquarters at the local office of the agency.

Mr. Dennis was statistical editor of the 1932 REFRIGERATION DIRECTORY AND MARKET DATA BOOK and has been identified with the trade publication field for a number of years.

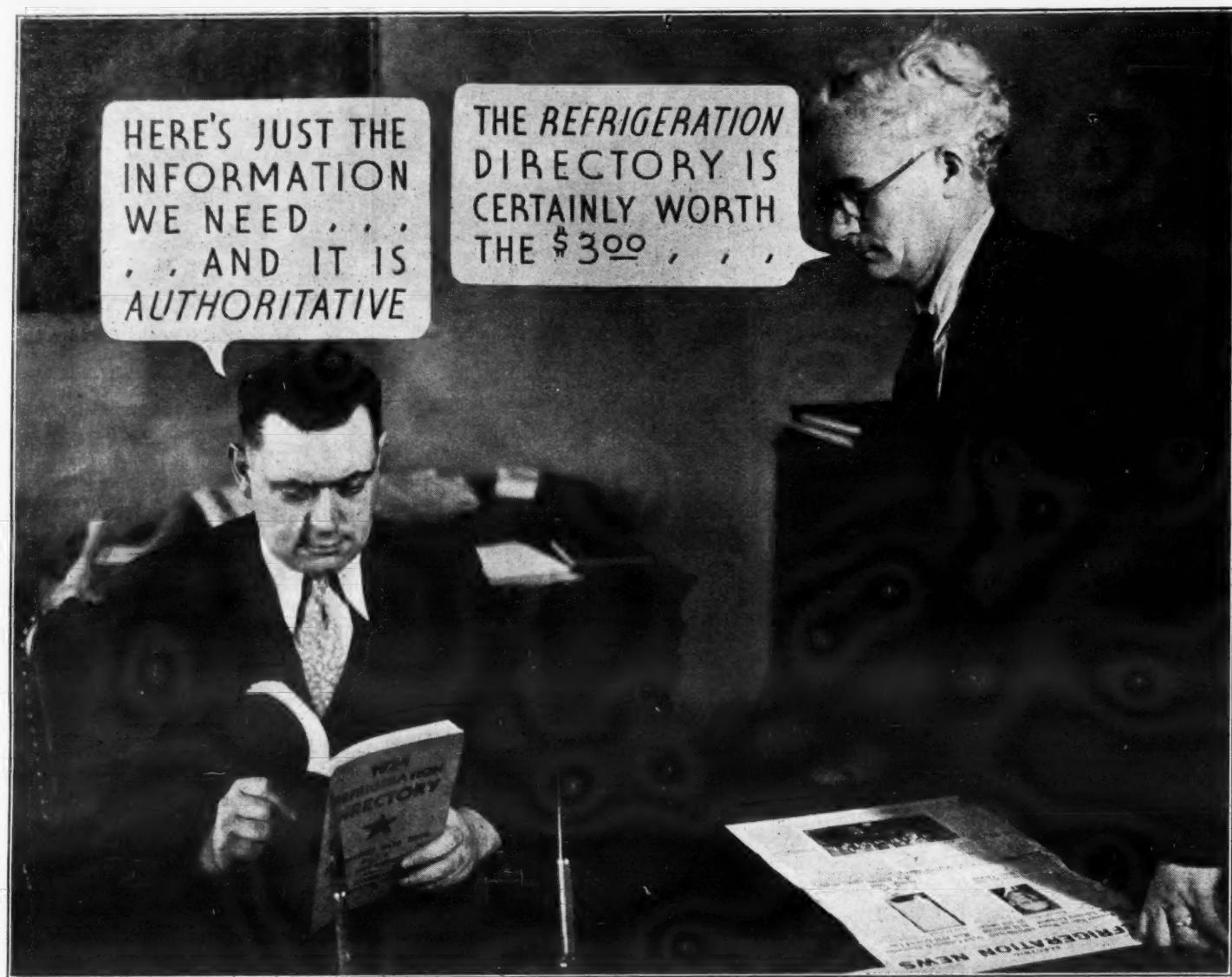


*Another
exclusive Delco feature
AUTOMATIC
END-PLAY TAKE-UP
... eliminating all
END-PLAY NOISE*

AN ELECTRIC motor entirely free from end-play noise is absolutely essential when used with a belt-driven compressor. With ordinary motors the continual whipping of the belt causes a longitudinal movement of the rotor and because this movement is not cushioned, objectionable end-play noises will develop. In Delco motors, however, the

cork end-play take-up cushions the movements of the rotor and so provides permanent protection against end-play noise. No adjustments are necessary, as the cork receives proper lubrication and will not wear out. This is only one of the exclusive features of Delco motors . . . investigate Delco when selecting a motor for a new compressor.

DELCO PRODUCTS CORPORATION, DAYTON, OHIO



You will need your copy too! Order it today

THIS year you men in the refrigeration business will be busier than ever before.

Any number of times you will want business information and you will want it in a hurry. You will not have time to make a search and delays may be costly.

That's where this new big book, chock full of facts, figures, and information which you need in the refrigeration business will be of invaluable service. It will supply you with information and statistics on past years' refrigeration sales.

It will contain complete specifications for every model of every make of household and commercial refrigerator.

It will supply you with the names of all manufacturers in the refrigeration business and the products they make.

It will be helpful in showing you what kinds of air-conditioning equipment are on the market and tell you where to buy.

If you need replacement parts, or related merchandise, such as refrigerator dishes, drinking water containers, it will tell you where they can be bought.

You will find a multitude of valuable uses for this book.

Order your copy now so that it will be at your service when you need it.

You can save money if you order now

The single copy price of the REFRIGERATION DIRECTORY AND MARKET DATA BOOK is only \$3.00, but you can save money by ordering it now in combination with a year's subscription to ELECTRIC REFRIGERATION NEWS. The combined price of the NEWS and the DIRECTORY is \$5.00. There is a further price reduction for quantity orders—

Send in your order now while you have it in mind.

Use the coupon below.

BUSINESS NEWS PUBLISHING CO.

5229 Cass Ave., Detroit, Mich.

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich.

- Enter my subscription to ELECTRIC REFRIGERATION NEWS for one year (52 issues).
Price: \$3.00 per year in United States and Possessions and countries in the Pan-American Postal Union; \$6.00 in Canada due to special tariff of 5 cents per copy; \$5.00 in all other countries.
- Send me the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK (to be issued in March).
Price: \$3.00 per copy in U. S. and Pan-American countries; \$6.00 in Canada; \$5.00 in all other countries.
- Enclosed find \$5.00, the combination rate for both the NEWS and the DIRECTORY. Send bill.
Combination rate for Canada: \$11.00. For all other countries: \$9.00.

Name

Attention of {
In Care of

Street Address

City and State

We sell the refrigerator and

(Please indicate other products or principal line of business.)

PROSPECTUS

of the 1934 edition of the
Refrigeration Directory and
★ Market Data Book ★

Alphabetical Listings

—Names of all companies which sell products or services to the refrigeration industry, listed alphabetically.

Trade Name Listings

—Alphabetical listing of all trade names of refrigeration products or equipment sold to the refrigeration industry identified with the product and name and address of the manufacturer.

Classified Product Listings

—Listing of all products sold by or used by the refrigeration industry together with name and address of manufacturer classified for ready reference.

Geographical Listings

—All manufacturers together with executive personnel, telephone number, addresses, and products, listed by states and cities.

Specifications

—Of all models of all makes of household and commercial refrigerators.

Sales Statistics

—Monthly sales for household refrigerators by states for the last six years with detailed breakdown showing sales of various sizes by the NEMA group of companies which account for about 86 per cent of the total industry production.

—Monthly sales for commercial refrigerators for the last six years with breakdown showing sales of cabinets, water coolers, ice cream cabinets, milk coolers, etc.

—Monthly export sales on all refrigerators by countries for the last eight years.

—Sales of industrial refrigeration machines for the last 33 years.

—An estimate of number of refrigerators sold for replacement.

Trends of Distribution

—An interesting picture of the refrigeration industry in 1933 with particular reference to

Price trends

Style trends

Effect of repeal

Air-conditioning sales

Tendency of dealers to handle more than one make

Attitude of dealers toward companion merchandise

The number and size of dealers in the industry

The place of the department store in the marketing picture

Refrigeration Associations

—Listing of official personnel of the trade associations in the refrigeration industry.

ENGINEERING

McCord Will Build Petrogas Systems For Cooling Trucks

(Concluded from Page 1, Column 5) gineers claim, it makes for better combustion. It is said to be competitive with ordinary gasoline on a mileage basis.

In addition to its use on refrigerated trucks, the same system can be employed in connection with the air-conditioning of passenger motor buses and other types of passenger carriers which are propelled by internal combustion motors.

Details of the Petrogas system as applied to refrigerated trucks are explained by F. G. Welke, one of its inventors, as follows:

The gas is held under pressure in liquid form in a storage tank at atmospheric temperature. A fuel line leads from the tank to a high-pressure regulator through which the fuel flows in liquid form.

The high-pressure regulator is set to reduce the pressure to approximately 5 lbs. per sq. in., and allows the fuel to flow into a series of expansion coils in the interior of the body which is to be cooled.

The absorption of heat from the interior of the truck evaporates the fuel to a gaseous form, thus accomplishing the refrigerating effect in the same manner as any direct expansion system.

In its gaseous form the fuel is then led to the low-pressure regulator and the pressure reduced to the vacuum which exists in the intake manifold of the engine or venturi tube of the carburetor.

If the vacuum ceases to exist in the venturi tube or intake manifold, the low-pressure regulator will close and shut off the flow of fuel. It might be well to explain that a vacuum always exists in the throat of the venturi tube of the carburetor or the intake manifold while the engine is running; this vacuum immediately disappears when the engine is stopped. The fuel system is then as fully automatic as the conventional gasoline system.

To allow the gas to work in conjunction with the regular fuel system, a special adapter has been developed by the inventors to allow an engine so equipped to operate on regular gasoline or Petrogas alternately by shutting off the supply of one and turning on the supply of the other.

New C-H Control



Beer cooler control with cold control.

Cutler-Hammer Makes Beer Cooler Control

MILWAUKEE — Cutler-Hammer, Inc., has introduced a new temperature control for the refrigeration systems of beer coolers. The new control is offered in two models, one with a cold control for manual regulation of temperatures, the other without the cold control feature. Both have an overload relay which breaks the electrical circuit should an overload develop.

The company has also announced a wide range of sizes of heater coils for the overload mechanism so that manufacturers of beer coolers can select a heater coil closely suited to the needs of any particular cooler. These start with a current rating of .80 amperes and run for 35 sizes up to a rating of 15.6 amperes.

Cutler-Hammer engineers recommend choice of heater coils on the basis of 135% of the normal operating current of the refrigeration motor. Horsepower ratings of the controls are $\frac{1}{2}$ hp. at 110 or 220 volts a.c.; $\frac{1}{2}$ hp. at 115 volts d.c.; or $\frac{1}{8}$ hp. at 230 volts d.c.

Illustrated above is the new beer cooler control with the cold control, designed for vertical mounting. It may also be built for horizontal mounting.

Specifications of Major Refrigerators

Major Appliance Corp., 14th floor, Merchandise Mart, Chicago, Ill.						
Model No.	L432	L526	P526	L628	P628	P856
Cabinet Specifications						
Overall dimensions (in.)						
Height	50 $\frac{1}{4}$	53 $\frac{1}{4}$	53 $\frac{1}{4}$	56	56	56
Width	25 $\frac{1}{2}$	26 $\frac{1}{2}$	26 $\frac{1}{2}$	30 $\frac{1}{4}$	30 $\frac{1}{4}$	38 $\frac{1}{4}$
Depth	23 $\frac{1}{2}$	24 $\frac{1}{2}$	24 $\frac{1}{2}$	25 $\frac{1}{2}$	25 $\frac{1}{2}$	25 $\frac{1}{2}$
Inside dimensions of liner (in.)						
Height	27 $\frac{1}{2}$	29 $\frac{1}{4}$	29 $\frac{1}{4}$	31 $\frac{1}{2}$	31 $\frac{1}{2}$	31 $\frac{1}{2}$
Width	19 $\frac{1}{2}$	20 $\frac{1}{2}$	20 $\frac{1}{2}$	23 $\frac{1}{2}$	23 $\frac{1}{2}$	31 $\frac{1}{2}$
Depth	15	16	16	15 $\frac{1}{2}$	15 $\frac{1}{2}$	15 $\frac{1}{2}$
No. of doors	1	1	1	1	1	2
Storage Capacity						
Gross food storage (cu. ft.)	4.56	5.62	5.62	6.65	6.65	8.98
Net food storage (cu. ft.)	4.32	5.26	5.26	6.28	6.28	8.56
Total shelf area (sq. ft.)	9.27	10.49	10.49	12.77	12.77	16.57
No. of shelves	3	3	3	3 $\frac{1}{2}$	3 $\frac{1}{2}$	6
Ice Cube Trays						
No. of trays	2	2	2	3	3	4
No. of cubes produced	68	63	63	112	112	140
Weight of cubes (lbs.)	4 $\frac{1}{2}$	6	6	8	8	10
Thickness of Insulation (in.)						
Top	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3	3
Bottom	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3	3
Sides	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3	3
Compressor Specifications						
Compressor capacity I.M.E. (lbs.) with a 20° evaporator and a 90° F. room	120	120	120	140	140	160
Motor size (hp.)	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Compressor speed (r.p.m.)	1725	1725	1725	1725	1725	1725
Compressor displacement (cu. ft. per hr. at atmospheric suction and 100 lbs. per sq. in. discharge pressure)	30	30	30	36	36	42
Weight, net, lbs.	115	130	130	138	138	145
Cabinet Materials						
Make of cabinet	Seeger					
Finish of shelves	Tinned					
Material used for breaker strip	Panelite					
Material used for gasket	Rubber					
Make of gasket	Miller					
Make of insulation	Seeger "Multicell"					
Finish						
Cabinet finish (exterior)	L models—Dulux; P models—porcelain					
Cabinet finish (interior)	Porcelain					
Hardware						
Process of manufacture	Cast					
Basic metal of hardware	Brass					
Finish of hardware	Chromium					
Motor	General Electric					
Type of motor	Capacitor					
Compressor						
Make of compressor	Sunbeam					
Type of compressor	Four-vane rotary					
Type of system	Conventional					
Compressor drive	Direct					
Type of shaft seal	Sunbeam					
Location of compressor	Above					
Refrigerant						
Refrigerant used	Sulphur dioxide					
Quantity in system (lbs.)	Model P856—2; models P628 & L628—1 $\frac{1}{2}$; all others—1 $\frac{1}{2}$					
Guarantee on cabinet	1 year					
Guarantee on system	1 year; with additional guarantee to recondition after, up to five years, at a cost not to exceed \$25					
Policy	No replacement parts sold to independent service companies					

Standard length of capillary tubing for the thermostatic bulb is 2 ft., although this may be furnished up to 8 ft. if required.

Temperature setting of this control can be such that the differential is as close as 4° F. or as wide as 8° F. engineers of the company explain. Thus, the No. 1 or "normal" setting can be fixed to cut out at 38° F. and cut in at 42° F.

By turning the adjusting knob "colder," this could be run down over the range for a total of 5° so that the control would cut out at 33° and cut in at 37° F. Conversely, turning the knob in the "warmer" direction permits raising the setting so as to cut out at 43° and cut in at 47° F., with intermediate steps.

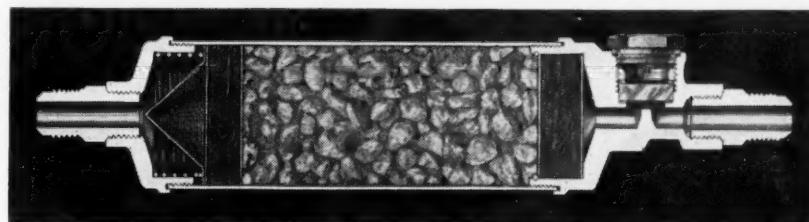
The control without the cold control feature has an adjustment whereby the cooler manufacturer can change the operating range, the adjusting means being so located as to be accessible only upon removal of the bakelite seal.

These controls are also suitable for water coolers, Cutler-Hammer officials point out.

Melco Opens Larger Branch In Boston

BOSTON—Branch office of Melchoir, Armstrong Dessa Co. here has been moved to larger quarters at 614 Memorial Drive, Cambridge, according to Henry A. Dolan, manager. Headquarters office of the concern in New York City was moved to larger quarters recently.

Henry Valve's Dehydra-Tector



New dehydrator, with liquid sight port at right.

Liquid Sight Port Aids Service Men

CHICAGO—Henry Valve Co. is introducing a new dehydrator with a liquid sight port through which a service man can look to see if gas bubbles are passing, indicating a shortage of refrigerant. The new product is known as the "Dehydra-Tector" and uses activated alumina as the dehydrating agent. It is designed primarily for commercial systems using sulphur dioxide, methyl chloride, or Freon.

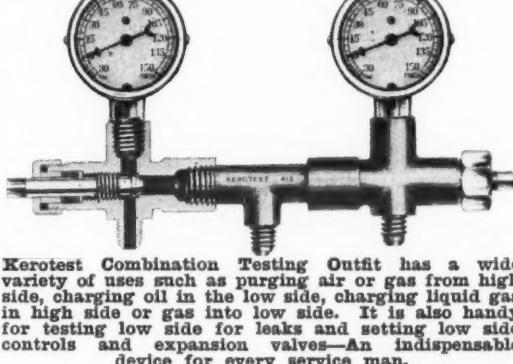
As shown in the cross section below, the liquid sight port is an integral part of the assembly, the glass "bull's eye" being furnished as a removable cap screw. The gasketed screw and cap protects the glass from breakage so that the Dehydra-Tector can be installed as a permanent part of an installation.

At the inlet port of the device is a conical screen with a relatively large screen area to act as a filter and strainer of sediment and loose particles of foreign matter in the system.

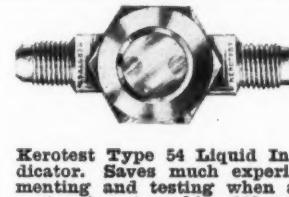
Two parts of large and small-mesh parallel screens support the metallic wool strainer pads. A retention spring holds the interior mobile parts of the Dehydra-Tector in position, and compensates for expansion and contraction of the absorbent, the designers state. Standard length of the device is 12 in., diameter 2 $\frac{1}{2}$ in.

Cap screws at each end of the device are of electric furnace iron, with tongue and groove joints to attain tight sealing.

When there is no need for a liquid sight port as in a suction line installation, the company offers the dehydrator alone, without the port. It also builds the Dehydra-Tector with a bypass assembly which permits insertion or removal of the unit without interrupting operation of the refrigerating system.

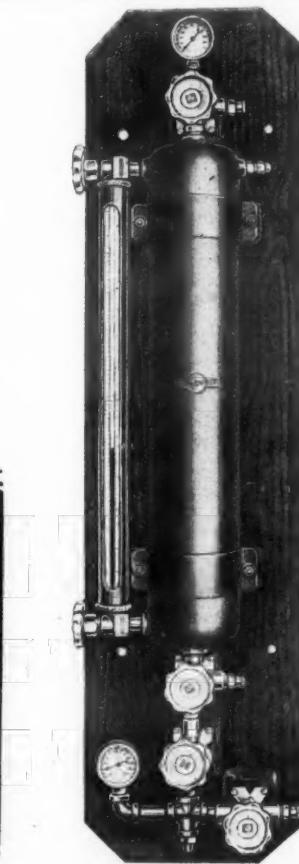


Kerotest Combination Testing Outfit has a wide variety of uses such as purging air or gas from high side, charging oil in the low side, charging liquid gas in high side or gas into low side. It is also handy for testing low side for leaks and setting low side controls and expansion valves. An indispensable device for every service man.

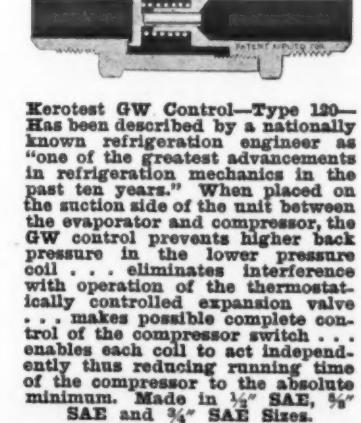


Kerotest Type 54 Liquid Indicator. Saves much experimenting and testing when a system is not working 100 per cent efficient... the mere presence of bubbles in the chamber below the annealed sight glass always indicates a shortage of refrigerant available in 1 $\frac{1}{2}$ SAE and 3 $\frac{1}{2}$ SAE sizes.

New KEROTEST aids to modern refrigeration and air conditioning that adds new sales advantages... banishes old troubles



Kerotest Type 470 Charging Stand. Made of drawn seamless steel with a liquid level glass of special extra heavy glass tubing ideal for this purpose... designed with a heavy steel shield and a laminated, shatterproof flat glass guard which deflects pressure away from the face of the operator in case of breakage of the liquid level indicator. Top of cylinder is also provided with a rupturable safety device which can be tubed to the open air eliminating escape of gas into room where men are working.



Kerotest GW Control—Type 120. Has been described by a nationally known refrigeration engineer as "one of the greatest advancements in refrigeration mechanism in the past ten years." When placed on the suction side of the draft between the evaporator and compressor, the GW control prevents higher back pressure in the lower pressure coil... eliminates interference with operation of the thermostatically controlled expansion valve... makes possible

REFRIGERANTS

Eustis Compares Various Refrigerants, Says No One is Perfect

By A. H. Eustis, President, Virginia Smelting Co.*

WE are frequently asked: what is the advantage of sulphur dioxide compared to methyl chloride or perhaps some other refrigerant? Sometimes we hear much the same question in the form: which is the best refrigerant? These questions have always interested me, and I have given considerable thought to the subject. In this paper I propose to outline my view of these questions, and I hope that when I have finished you will realize that from my point of view there is no such thing as "The Best Refrigerant" because I believe the choice depends entirely on what the refrigerant is to be used for.

Listed in table No. 1 are some of the substances which have been used as refrigerants. They are listed in the order of their boiling points. The tabulation also gives the pressure of the vapor at 86° F. expressed as inches of vacuum or gauge pressure, also the volume of the vapor at 5° F. expressed as cu. ft. per minute which must be condensed in order to absorb 200 B.t.u. per minute.

These volumes are calculated on the assumption that the liquid comes to the evaporator at 86° F., and no allowance is made for superheat in the

condenser at 86° F., and the critical pressure and critical temperature of the refrigerant.

In Fig. 2, are the pressure curves of these same refrigerants. In a few cases I have omitted parts of the curve because the data were not easily available.

In Fig. 3 are the volumes of the various vapors at different evaporator temperatures expressed in cu. ft. per minute, which must be condensed in order to absorb 200 B.t.u. per minute. These volumes are also calculated on the assumption that the liquid comes to the evaporator at 86° F., and as before, no allowance is made for superheat.

I would next like to point out that the unit of refrigeration: namely, 200 B.t.u. per minute, can be accomplished

Refrigerant Data

Refrigerant	Boiling Point ° F.	Gauge Pressure at 86°	Volume of Vapor at 5°	Ratio Cu. Ft. per M. for 200 B.t.u. per M.	P @ 86°	Critical Pressure	Critical Temp.
Water	212	28.9*	646 —@ 32° F.—	6.9	3,200	737.2	
Carrene	105	9.5*	74.0	8.56	1,490	421.0	
Dichlor-Methane							
Methyl Formate	89	1.9*	49.3	7.89	870	417.0	
Ethyl Chloride	54	12.4	22.7	5.9	764	361.0	
Sulphur Dioxide	14	51.7	9.08	5.6	1,160	314.8	
Methyl Chloride	-10	80.8	6.49	4.5	969	289.6	
F-12	-21	93.2	5.81	4.1	580	232.7	
Ammonia	-28	169.0	3.44	3.5	1,639	271.2	
Propane	-48	143.0	3.38	3.5	661	204.1	
Ethane	-126	666.0	1.87	2.8	718	89.8	
Carbon Dioxide	-108	1,024.0	0.80	2.5	1,071	87.8	
Nitrous Oxide	-128	915.0	...	...	...	...
Ethylene	-153	...	...	...	...	...
Methane	-264	...	...	...	...	...

*Inches of vacuum.

vapor. You will of course appreciate that these volumes would be slightly different for different liquid temperatures.

The table also gives—except in the case of water—the ratio of compression with evaporator at 5° F. and compression with evaporator at 86° F.

*Speech before meeting of the Compressed Gas Manufacturers Association at Hotel Astor, New York City, Jan. 26.

by liquefying the volume of each of the different refrigerants shown by the curves for any evaporator temperature. I also want to point out that this liquefaction may be accomplished by compressing the volume shown for each of the refrigerants to the pressure shown in Fig. 2, which pressure will depend on the temperature of the condenser.



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Pressure-Temperature Chart for Various Refrigerants

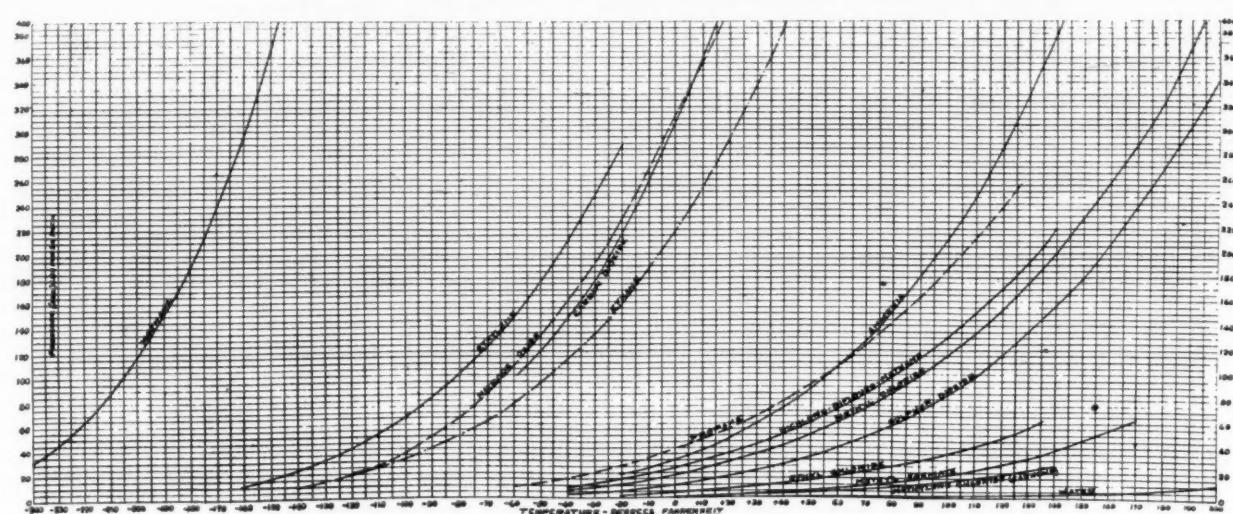


Fig. 2—Pressure-temperature relationship for various common refrigerants.

This statement is an approximation and must be modified on account of the fact that the volumes are calculated for only one condenser temperature, and would be slightly different for different condenser temperatures.

But the curves are sufficient to show the very wide range of volume and corresponding pressure which is available to the engineer for accomplishing the unit of refrigeration.

There is no important difference in the power required per unit of refrigeration by using the different refrigerants, except as one is better adapted than another to the mechanical compressor to be used.

It would seem that the engineer's choice among this wide range of volumes and pressures which are at his disposal will depend very largely on the job at hand. A different refrigerant will be convenient for quick freezing of food stuffs than one for use in a water cooler.

A refrigerating machine is a device to absorb heat units at some temperature and radiate the heat units at some higher temperature. The choice of the refrigerant will depend very largely on the temperature at which the heat units are to be absorbed, and to a less extent on the temperature at which the heat units are to be radiated and also to a very large extent on the size of the unit or machine.

For each size of machine there is a convenient pressure or range of pressures. I think that this convenient

subject to leakage is 100 times as great in the small cylinder as in the large cylinder. This is one of the reasons why a lower head pressure is more convenient in a small machine than in a large machine.

The suction pressure also has to be considered in choosing a refrigerant for a small unit. In many of the small compressors the seal between the gas inside the compressor and the outside air is exposed to the suction pressure.

If this suction pressure is high, there is danger of the refrigerant leaking out, in which case the machine will eventually become empty. If the suction pressure is below atmosphere there is danger of the air leaking in, which will tend to cause high head pressures, and may also be a means of introducing moisture.

Therefore, a refrigerant which has a suction pressure just a little above atmosphere is convenient for a small machine.

This latter point is of more importance in the small machine than in the large machine for two reasons: first, the small machine usually operates without attendant, whereas the large machine is usually attended. Secondly, the small machine usually carries a very small charge of refrigerant, often not over 2 lbs., hence a small leak might quickly become a large proportion of the whole.

There is another consideration which has a direct bearing on the

sized unit varies with the refrigerant used.

There are other factors which influence the choice of a refrigerant besides the pressures and the type of compressor used. I will run over a few of these.

Lubrication

Lubrication is of vital importance and the different refrigerants require different lubricants. Mineral oils work fairly well with the different refrigerants. For use with SO_2 , the oil must be very low in moisture, as the moisture introduced into the system with the oil is just as harmful as moisture introduced in any other way.

A comparatively short time ago many recommended the use of white oil of the type of Nujol with SO_2 . Such an oil is almost insoluble in liquid SO_2 .

The more general practice today is to use a less highly refined oil; that is, at least partially soluble in the liquid sulphur dioxide.

With methyl chloride it is advisable to use a rather heavy oil because practically all oils are soluble in methyl chloride, and moreover, the methyl chloride is absorbed and dissolved in the oil and tends to dilute and thin it so that it is advisable to start with a heavy oil.

There have been cases of what looks like copper plating on the valves or other moving parts of compressors using methyl chloride, and it is generally believed that this is caused by some action of the oil. I understand that oils have been developed which do not have this difficulty.

With any refrigerating machine, excepting a centrifugal compressor, an oil must be selected that retains its lubricating qualities at the temperature of the suction gases. In the case of low temperature machines, this must be carefully watched.

There is another quality which is important in a refrigerant and that is the quality of permanency. We want a substance which can be vaporized and liquefied repeatedly for several years on end in contact with various substances and under various temperatures without any decomposition or change. Many of the refrigerants in use have this quality, but it should not be lost sight of.

Another minor point is the ease of finding leaks in the system. With SO_2 or ammonia this is easy by virtue of the white fumes that are formed when SO_2 and ammonia come together. If there is ammonia in the system you can use sulphurous acid to find the leak. If there is SO_2 in the system you can use ammonia water to find the leak. With methyl chloride and Freon finding leaks is not so easy. Flame tests have been developed for this purpose, however.

Cost

It is an unfortunate fact that everything that an engineer uses has to be paid for and therefore any general discussion of this sort must include some mention of the cost of the different refrigerants.

The following are the approximate prices for the various refrigerants in moderate quantity delivered in New York City:

Ammonia 14¢ per lb.
 Sulphur dioxide 12¢ per lb.
 Methyl chloride 45¢ per lb.
 Carbon dioxide 8¢ per lb.
 Freon 65 to 75¢ per lb.

The last one is an estimate only, as I have no reliable quotations.

It is interesting to note that the three low-cost refrigerants: carbon dioxide, sulphur dioxide, and ammonia have important uses other than refrigeration, which insures the manufacturer a larger outlet.

The newer refrigerants, Carrene and Freon and their associated compounds are guarded by patents which tend to grant a monopoly to the owners of the patents. The patent situation is rather complicated, and I will not attempt to discuss it here.

To come back to the general question of the relative merits of these various refrigerants, my conclusion is that it all depends on what you want to use the refrigerant for. They are all good in their place.

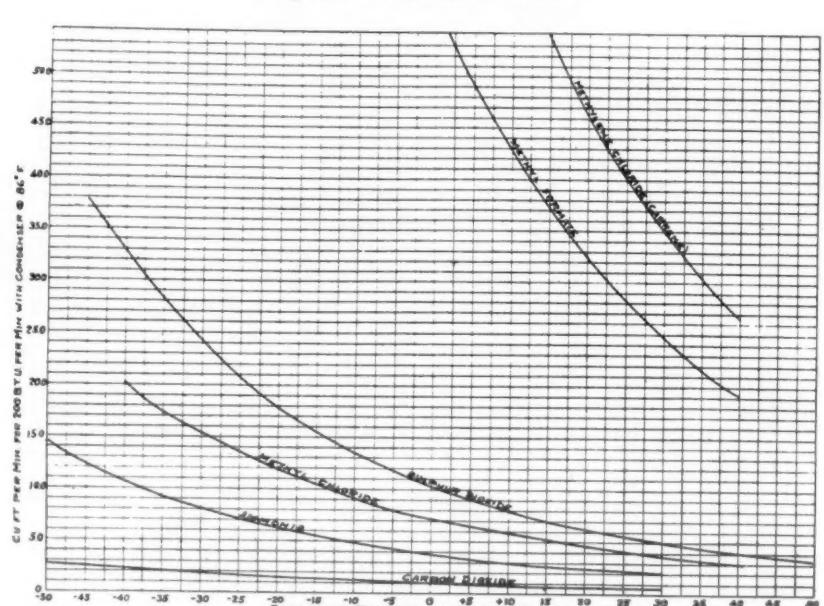


Fig. 3—Volume of vapor of various refrigerants at different evaporator temperatures which must be condensed in absorbing 200 B.t.u. per minute.

pressure is quite different in a small machine (such as a household refrigerator) from what it is in a large machine such as would be used in an ice-manufacturing plant.

The small machine would likely use sulphur dioxide with a head pressure of 52 lbs. and a suction pressure of 0 to 14° F., whereas the large machine would undoubtedly use ammonia with a head pressure of 169 lbs. and a suction pressure of 20 lbs. at 5° F.

As a suggestion as to why the lower pressure is more convenient in the small machine I offer the following: If the piston of the larger machine is 10 in. in diameter with a 10-in. stroke, the displacement per stroke is 785 cu. in.

If the clearance between the piston rings and the cylinder wall is 0.001 in., the area for leakage by the piston is 31.4×0.001 in. or 0.031 sq. in. If the piston is 1 in. in diameter, with a 1-in. stroke, the displacement per stroke is 0.78 cu. in. If the clearance between the piston rings and the cylinder wall is the same as before, the area for leakage is 3.14×0.001 or 0.0031 sq. in.

The area subject to leakage in the small cylinder is one-tenth as great as the area in the large cylinder, but the volume in the small cylinder is only one-thousandth of the volume in the large cylinder, or to put it another way: for the same volume the area

choice of the refrigerant so far as pressure is concerned, and that is the type of the compressor.

Besides the piston type of compressor there are three other types that have been used. First, the rotary compressor, such as is used in the Norge household machine and also in other makes. Secondly, the centrifugal compressor; and third, the steam ejector.

The leakage by the rotor of the rotary compressor is probably slightly greater than with the piston compressor, and therefore a refrigerant with a low head pressure and correspondingly large volume is preferable in such a compressor. With this probably in mind General Electric is using methyl formate in a compressor of this type for some of their machines.

The centrifugal compressor is convenient for large volumes and relatively low pressures. It is used by the Carrier Engineering Corp. with Carrene as a refrigerant, and at least one has been built for compressing ammonia in very large volumes.

The ammonia machine I refer to was built by the Brown Boveri Co. In the Brown Boveri Review for October, 1927, this machine is described, and the point is made that a centrifugal compressor is practical for refrigeration only in large size units, and furthermore that the minimum

AIR CONDITIONING

Dr. Mills Shows How Climatic Changes Affect Health of Human Beings

Temperate Zones Make People Energetic and Nervous; Tropics Cause Listlessness; Both Need Air Conditioning

NEW YORK CITY—How people living in the cool stormy regions of the temperate zone are vigorous, full of pep, and so energetic that physical breakdowns are frequent and increasing seriously, how people in the tropics and our own gulf states live a more relaxed, care-free and less progressive existence, and how air conditioning may be applied to remedy these climatic effects on human beings was told to members of the American Society of Heating and Ventilating Engineers in their recent convention here by Dr. C. A. Mills, professor of experimental medicine of the University of Cincinnati.

According to Dr. Mills, "the relation of our weather environment to our health and general welfare is a factor of great importance, and one which has been badly neglected in scientific advances along public health lines."

These effects on people are exactly paralleled by results of controlled temperature and humidity conditions on animals, he declared, and pointed out that under carefully controlled laboratory conditions, it has been found that animals adapted for a few weeks to constant moist heat lose most of their heat producing capacity and bodily vigor.

"When subjected to chilling they cannot quickly increase their heat production and so suffer a fall in body temperature and are prostrated. Hand in hand with this sluggish heat and energy metabolism they show a lowered resistance to infection, and pneumonia, tuberculosis, and other types of infection attack them with ease," he said.

"Under the greater stimulation of a cold environment, animals are more

energy metabolism, and when these fail, disease appears," he explained.

"We derive most of our heat and energy from the burning of glucose, and in this burning the pancreas plays an essential and important part. Thus diabetes is only a sign of pancreatic failure to meet the level of activity demanded.

"Toxic goiter also represents failure of successful adaptation to stimulation, and we might well class arteriosclerosis and high blood pressure in the same category," he stated. The speaker's maps of Figs. 2, 3, and 4 show how closely other bodily disturbances follow the climatic drive of Fig. 1.

Diabetes in the north is a very much more severe disease than it is in the south, he pointed out in the map of Fig. 2, reaching its greatest severity in our west central states where the climatic stimulation is most intense. The same holds true for exophthalmic goiter, for pernicious anemia, for arteriosclerosis and a number of lesser metabolic diseases, and curiously enough for cancer, see Fig. 3.

"These advancing signs of bodily breakdown in the most stimulating areas, are more than matched by the mental picture. Suicides, mental

Diabetes

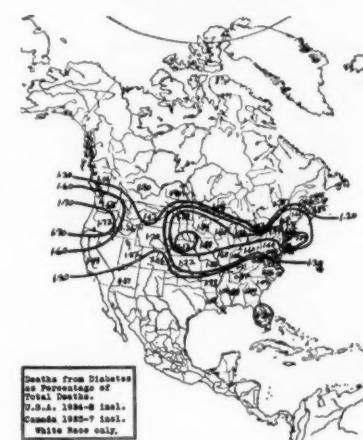


Fig. 2—Diabetes is most severe in our northern and western states when the climatic drive is most intense.

severity of the storm changes in the weather, week after week," he stated.

These important phases of human welfare bring us to the question of what are we to do about it? Dr. Mills continued.

"If, in the very stimulating areas of the earth, as in our middle western states, the human machine shows evidences of breaking under the strain, shall we not seek means of lessening the driving force to within safe limits? And in the tropics, where man is held down to a mere existence energy level by climatic stagnation, should we not attempt to relieve him from the pall of physical depression that holds him down?"

Air conditioning is the answer, he implied.

From the standpoint of our own

well being in America, the most important causes of stress come from our severe and frequent storm changes, he indicated. "The wide swings in temperature and barometric pressure which we must endure every few days do us untold harm," he said.

"True enough, it is these changes that generate in us our high level of energy, but they also bring us to grief and bodily misery. Such diseases as pneumonia, acute appendicitis, colds, sinus trouble, and chronic arthritis—these are closely related to our severe storm changes, and do much to reduce our health and efficiency," he declared.

"Effects on our nervous system are even more important, for we must be constantly shifting from the irritation and feeling of futility that comes with the low pressure, rising temperature days, over to the exuberant exhilaration of the cool high pressure periods. We are never left in a state of calm for more than a few days, but must be always jumping about mentally, due to the effect on us of these weather changes," the speaker opined.

It is no wonder that we are notional and take up everyfad that comes along, he remarked. Sub-conscious realization of this irritated mental state leads us into passage of innumerable laws and regulations, most of which we disregard as soon as they are passed, he pointed out.

He also stressed the deleterious mental effects of our frequent weather changes. Continual confusion and changing from mental depression to exhilaration exhausts us emotionally, he believes, and leads to an existence full of irritation and restlessness.

Dr. Mills said that is why people from stormy areas find Hawaii, south-

(Concluded on Page 18, Column 1)

Nephritis

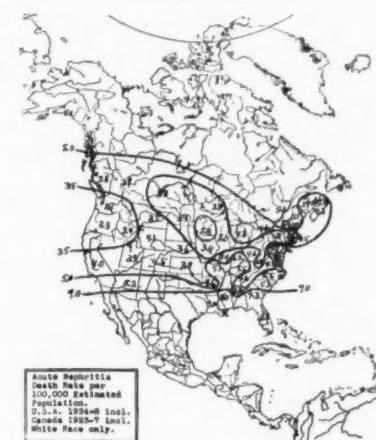


Fig. 4—Chart of death rate for acute nephritis.

Cancer



Fig. 3—The map of cancer fatalities also conforms to the intensity of climatic drive.

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lusty, lay on more fat, and are better able to resist sudden chilling, and are more resistant to all forms of infections.

"Most active of all are animals shifted daily from heat to cold so that they are required to make frequent and sudden adjustments in their heat production. Such animals stand chilling best of all, but are most sensitive to high temperatures," the doctor reported.

Based on the intensity of "climatic drive" imposed on man in different regions, he had constructed a world map, shown in Fig. 1. The map is based on best available knowledge as to the effects of this climatic drive on man and animals, and represents comparative differences all over the world, he showed.

"It will be seen that we here in north central North America have imposed upon us the most vigorous climatic drive man is anywhere called upon to endure.

"Perhaps this in a measure explains the astonishing rate of development of the physical resources of the continent," he continued. "Perhaps it also explains our restless and impetuous zeal for action, as well as our irritated, nervous state.

"In our gulf states the climatic drive is very much less, similar to that of the Mediterranean countries of Europe and of Japan and China."

The speaker regards the climatic vigor which characterizes the north central zones as a rather serious situation because, he said, we are not capable of unlimited response to this stimulation, and are showing definite signs of breaking under the strain.

"Certain of our glands of internal secretion are closely bound up in our

breakdown, and nervous disorders are nowhere so frequent as here and in the most stimulating European regions.

"We see, then, that the south profits by its lessened climatic drive in maintaining greater bodily and mental stability," he said. "The easier, more relaxed and care-free existence that goes with the lower energy level less often brings on the diseases of exhaustion. In many ways the southerner is to be envied. With his lower energy state, however, he is more susceptible to infections and shows a higher death rate from tuberculosis, acute nephritis and acute appendicitis.

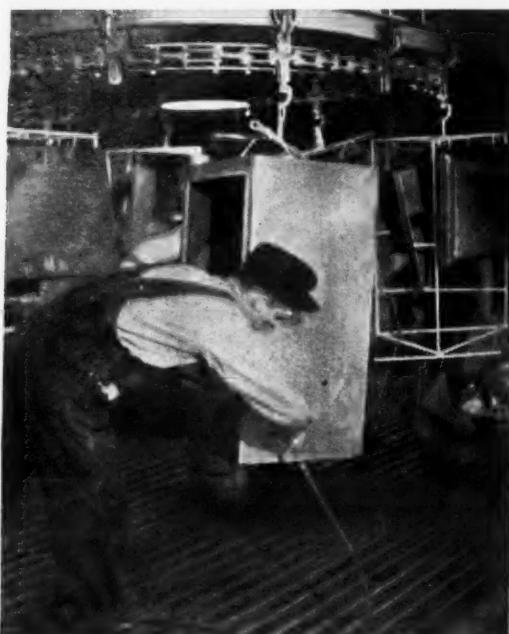
"The accompanying map of acute nephritis (Fig. 4) death rates in North America shows just the reverse of the diabetes findings (Fig. 2). Where diabetes is most severe, there acute nephritis causes fewest death, and in the south, where diabetes is mild, acute nephritis is most severe. These same findings hold true for the countries of Europe also," he told the engineers.

In addition to these disease and energy differences that come from the varying intensity of climatic drive, the speaker said, we have marked effects on health in our stormy regions that come as a result of the wide frequent swings in temperature and barometric pressure.

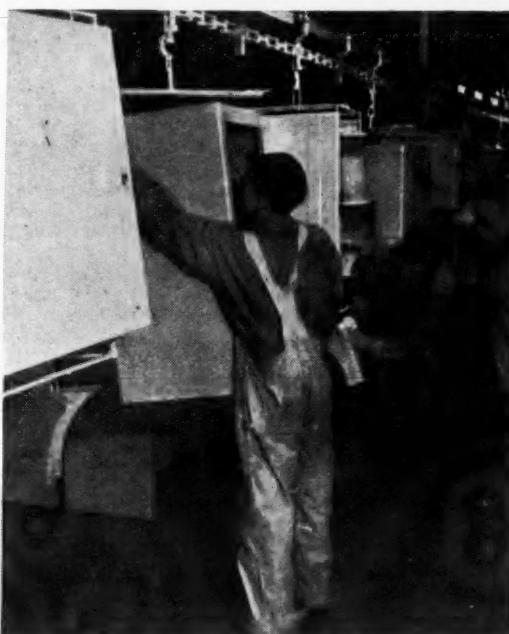
"Acute appendicitis attacks and suicides, for instance, have been found to come mainly with the periods of rapidly rising temperature and falling pressure that precede our storms.

"Colds and pneumonia, on the other hand, come with the days of rapidly falling temperature. But in all these cases, the frequency of attacks are determined by the frequency and

New Production Lines Applying Dulux to Seeger Cabinets



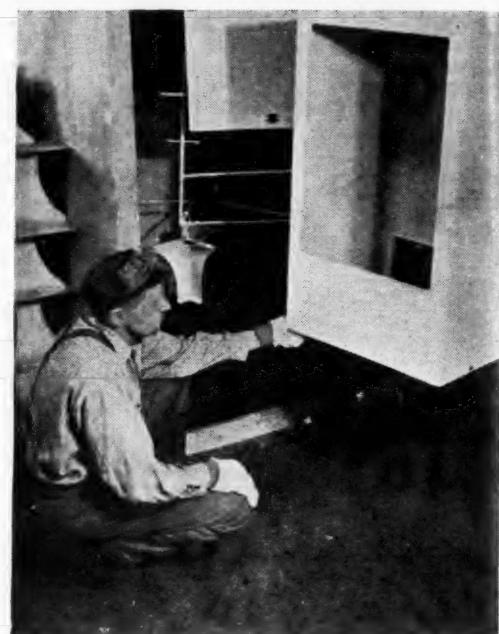
Air cleaning after the parts for Seeger cabinets come out of the pickling process.



Workmen sand cabinets for the second coat of Dulux after the first coat is baked on.



Sanding and inspecting parts after the second coat, preparing them for the last coat.



Final inspection before assembling the parts into complete Dulux-finished Seeger cabinets.

Conditioning Needed To Relieve Vagaries Of Varying Climate

(Concluded from Page 17, Column 5) ern California, and Florida such desirable places for rest and relaxation.

Our greatest hope of climatic control, the speaker feels, lies in air conditioning for human comfort. "The cost of the necessary equipment for installation in old buildings is still beyond the reach of many, but installation in properly planned new structures is in the long run much more economical than our old haphazard methods of heating and ventilating.

"It has been shown by hospital architects, for instance, that hospitals fully adequate for every reasonable need can now be built and equipped for complete temperature control the year 'round for not over \$2,500 per bed, whereas past costs have ranged from \$4,000 to \$10,000 per bed with no provision for cleaning the air or for summer cooling.

It was also pointed out that not only do the heat waves of summer bring on a variety of acute ailments, such as acute appendicitis and summer diarrhea, but that these patients do most poorly when compelled to lie in hot hospital rooms.

"Surgeons are aware of this lessened vitality of patients during the periods of heat and tend to postpone until cooler weather major operations that are not of an urgent nature," he said.

"Most often, however, delay is not

possible, as in acute appendicitis, and on this account it would seem imperative that surgical hospitals should be fully protected against excessive heat, for both the operation and the after care. It is quite likely that convalescence from operations and fever ailments could be considerably shortened by providing the proper mean temperature level and proper daily range for each day to give the right degree of stimulation.

"At present, throughout the Tropics and Orient, recovery from a serious illness or operation is much slower than in more stimulating regions."

That it is only a matter of time until hospitals and the medical profession will be brought to greater use of air-conditioning methods as direct aids in securing recovery from illness, is the hope of the speaker.

In lieu of expensive equipment in homes, or of seasonal migration to counteract climatic effects, Dr. Mills proposed that there be made available in each city artificial climates of various types, in hotels, hospitals or sanitariums, where the patients can go and enjoy the relaxing effects of Florida or Hawaii for a couple of weeks and still be near business or professional interests.

"Two weeks' rest in bed, in a room kept at 85° F., with 70% relative humidity, would go a long ways toward quieting down the over-dynamic hypertensive individual of our northern cities.

"The same type of air-conditioning equipment could be used, also, to produce changeable stimulating environments of any intensity desired in speeding recovery from run-down states, for use in relieving hay fever

and asthma sufferers during their periods of distress.

Dr. Mills sees another possibility in the use of cooling equipment in the warmer countries to step up human energy and efficiency to a level more nearly equal to that of the temperate regions.

"Animal experiments indicate that this can be readily accomplished by just a few hours of cooling each day, such as might be most economically obtained by chilling the sleeping quarters.

"Everyone is aware of the refreshing effect of a cool night after a hot day, and now the day's heat does not depress nearly so much when a good night's sleep is possible," he pointed out.

One aspect of air conditioning to which little thought has been given is that in breeding and care of domestic animals, according to the speaker.

"Experimental studies have shown that animals raised under optimal climatic conditions are more fertile, mature earlier, and are in all ways more vigorous than those subjected to moist heat," he said.

He then told about marked differences in fertility and growth of mice bred under controlled laboratory conditions. Litters are usually almost twice as large in the cold as in the hot environment, and in addition they are much more lusty, he reported.

"With the small litters of the hot room, a large number are born dead or die soon after birth. In addition, although the animals mate freely in either heat or cold, conception is almost invariable in the cold, but difficult to attain in the hot room," he said.

"Just as important as the fertility differences, however, are the changes in rate and type of growth produced by the different environments. By proper stimulation, growth is at all times far ahead of that seen under moist heat. The animals raised in the cold are more plump, their bodies are larger, and their weight markedly higher," he reported.

These facts should be of great value in the raising of stock for meat, whether it be beef, pork, mutton, or fowl, he averred.

He next showed that those areas of the earth where meat supplies are most easily and cheaply produced are also those characterized by a stimulating climate. The states of our north and western plains, Australia, the Argentine, Central Europe, the Mexican plateau—these all are favored by a climate that induces great vigor of body, rapid growth and great fertility.

"The Tropics and Orient, on the other hand, and also the states of the Old South (from Louisiana eastward) are held down by devitalizing moist heat for all, or a large part, of each year, and so find domestic stock raising difficult. Breeders have tried, time after time, the introduction of the fine vigorous strains from the more stimulating regions, only to find them soon sinking to the lean stringy type so common in those regions. It is almost impossible to keep up a herd of good milk cows there, principally because of the toll taken by tuberculosis and the climatic suppression of metabolism," according to Dr. Mills.

"Is it not time that the knowledge now available be used to liberate the south (and all regions afflicted with moist heat) from this serious handicap to their economic development?" he asked. "Why should they not provide their own supply of good meat, eggs and milk in abundance?

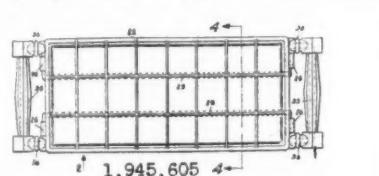
"Artificial cooling, properly applied would I am sure solve the problem for them. Dog raising, poultry growing, and the proper care of race horses demands just as much consideration of these climatic effects and the means of their relief, he said in conclusion.

PATENTS

Issued Feb. 6, 1934

1,945,605 FREEZING TRAY. Harvey D. Geyer, Dayton, Ohio, assignor to The Inland Mfg. Co., Dayton, Ohio, a corporation of Delaware. Application May 2, 1931. Serial No. 534,472. 15 Claims. (Cl. 62-108.5)

11. A freezing tray comprising: a flexible non-metallic container and a relatively rigid metal support therefor, said



strips having integral spaced portions thereof at the discharge edge bent laterally of the plane occupied by the body of the strips and toward an adjacent strip to provide a diffusing means for the air stream passing between the strips.

1,945,675. REFRIGERATION. Carl Georg Munters, Stockholm, Sweden, assignor to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application Dec. 12, 1929. Serial No. 413,438, and in Sweden March 2, 1929. 9 Claims. (Cl. 62-178.5)

2. A refrigerating apparatus comprising a cold accumulator, said cold accumulator comprising an insulated vessel containing a relatively large body of congealable homogeneous material, a stationary vaporization-condensation member having its upper portion submerged in said body and its lower portion in heat exchange relation with the medium to be cooled, and a second stationary vaporization-condensation member having its lower portion submerged in said homogeneous body and its upper portion exposed to the atmosphere.

1,945,689. CHEMICAL CONTAINER. Eugene A. Huitt, Saltville, Va., assignor to The Matheson Alkali Works, Inc., New York, N. Y., a corporation of Virginia. Application Jan. 5, 1932. Serial No. 584,884. 15 Claims. (Cl. 62-91.5)

1. In a vehicle, the combination of a body having a top, a plurality of long, narrow compartments within the body and extending transversely thereof, said compartments terminating below the top of said body and having walls of insulating material and partitions extending transversely of the car between successive groups of compartments and forming a plurality of rooms in the body, each containing a plurality of compartments.

1,945,924. REFRIGERATING APPARATUS. Carl W. Steiner, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application March 23, 1929. Serial No. 349,429. Re新ed March 1, 1933. 9 Claims. (Cl. 62-115.)

1. A refrigerating apparatus comprising in combination, a compartment having one side only open, a compressor and a motor disposed within said compartment, said motor being located at the side of said compressor, a fan on the compressor for circulating air in through the open side of said compartment and over said compressor and motor, a condenser between the fan and compressor, and means operated by the motor for intensifying the circulation of air over the condenser and out of said compartment.

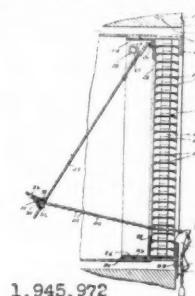
1,945,944. AIR CONDITIONING SYSTEM AND APPARATUS THEREFOR. Frank T. Leilich and Robert K. Leilich, Baltimore, Md., assignors, by mesne assignments, to William W. Varney, Baltimore, Md. Application Dec. 3, 1930. Serial No. 499,763. 4 Claims. (Cl. 257-7.)

1. A cooling apparatus for air or gas, comprising a bunker, a fluid inlet into said bunker and arranged to permit said fluid to contact with a refrigerant means within said bunker, an outlet to said bunker for withdrawing said fluid from said bunker, means for cooling gas by said fluid in its circulation outside of said bunker, and means for bypassing a part of said fluid by said air-cooling means to lower the temperature of said fluid.

1,945,972. REGISTER AND GRILLE. John A. Germonprez, Grosse Pointe Park, Mich., assignor to Uni-Flo Grille Corp., Detroit, Mich., a corporation of Michigan. Application Sept. 30, 1931. Serial No. 566,149. 13 Claims. (Cl. 98-106.)

13. A grille for an opening through which air is discharged comprising a plurality of flat thin strips of material

supported side by side in spaced relation one to the other, and parallel to the direction of flow of air therebetween, the



strips having integral spaced portions thereof at the discharge edge bent laterally of the plane occupied by the body of the strips and toward an adjacent strip to provide a diffusing means for the air stream passing between the strips.

1,946,029. REFRIGERATION APPARATUS. Wilbur G. Midnight, Cleveland, Ohio, assignor to Perfection Stove Company, Cleveland, Ohio, a corporation of Ohio. Application Aug. 22, 1931. Serial No. 558,747. 17 Claims. (Cl. 62-5.)

2. Refrigerating apparatus comprising a cold accumulator, said cold accumulator comprising an insulated vessel containing a relatively large body of congealable homogeneous material, a stationary vaporization-condensation member having its upper portion submerged in said body and its lower portion in heat exchange relation with the medium to be cooled, and a second stationary vaporization-condensation member having its lower portion submerged in said homogeneous body and its upper portion exposed to the atmosphere.

1,946,095. REFRIGERATION APPARATUS. Wilbur G. Midnight, Cleveland, Ohio, assignor to Perfection Stove Company, Cleveland, Ohio, a corporation of Ohio. Application Aug. 22, 1931. Serial No. 558,747. 17 Claims. (Cl. 62-5.)

1. In absorption refrigeration apparatus, means for heating the generator-absorber, thermostatic means for controlling said heating means, a receptacle in communication with the generator-absorber end of the refrigeration system and adapted to be flooded with liquid therefrom, said thermostatic means being in heat exchange relation to the contents of said receptacle, and connections whereby the liquid contents of said receptacle, are displaced by refrigerant gas returning from the receiver-evaporator end of the system to the generator-absorber end thereof.

1,946,195. PURIFICATION OF ORGANIC FLUORINE COMPOUNDS. Herbert Wilkins Daudt, Wilmington, Del., assignor to Kinetic Chemicals, Inc., Wilmington, Del., a corporation of Delaware. Application Aug. 10, 1932. Serial No. 628,153. 12 Claims. (Cl. 260-162.)

1. The process of purifying fluorinated aliphatic hydrocarbons containing acidic impurities which includes contacting an amine therewith, and separating fluorinated aliphatic hydrocarbons from the resultant product.

1,946,328. APPARATUS FOR REMOVING SUPERHEAT FROM COMPRESSED GAS TO BE CONDENSED IN A SURFACE CONDENSER. Judson Neff, Louisville, Ky. Application July 12, 1932. Serial No. 622,131. 1 Claim. (Cl. 62-115.)

In a refrigeration system using a liquefiable gas refrigerant, the combination with a condenser and a compressor, of means providing a chamber in communication with the condenser and compressor between them, and conduit means leading from the bottom of the condenser to the top of said chamber to feed some of the gas in a liquid state into the chamber to saturate the gas on its way to the condenser from the compressor to lower the pressure in the condenser and at the same time increase the heat transfer efficiency of the condenser.

1,946,372. PATENTS. Searches, Reports, Opinions by a Specialist in REFRIGERATION. H. R. VAN DEVENTER, Solicitor of Patents, Refrigeration Engineer, 342 MADISON AVE., NEW YORK

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U.S. PATENT NO. 1,376,238.



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Answer—For household evaporators, get in touch with the following:

Fedders Mfg. Co.
57 Tonawanda St., Buffalo, N. Y.
McCord Radiator & Mfg. Co.
2587 E. Grand Blvd., Detroit, Mich.
Mullins Mfg. Corp., Salem, Ohio.
Trenton Auto Radiator Works
Trenton, N. J.

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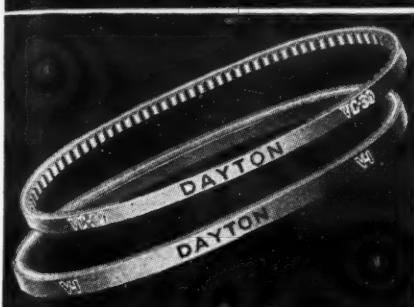
The first fin coil to eliminate the soldered return bend with its trail of corroded and leaking joints, the PEERLESS now eliminates the soldered reducing nipple on the inlet and outlet connections of the coil. The $\frac{1}{2}$ " tubing of the fin coil is itself reduced to $\frac{1}{2}$ ".

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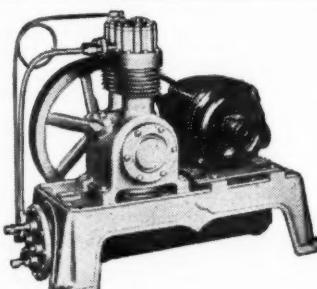
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Seeger Refrigerator Co.
Arcade, Wells & Whitehall Sts.
St. Paul, Minn.
Truscon Steel Co., Pressed Steel Division
6100 Truscon Ave., Cleveland, Ohio.

1933 Sales Figures
No. 1498 (France)—"Can you tell me how many household electric refrigerators were sold in the United States last year and their total value? I would also like to know how many were exported from your country."

Answer—A total of 1,080,000 household electric refrigerators were sold last year by American manufacturers, including 55,000 exported. Estimated retail value of this total is \$183,600,000. For complete details see the new 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK, which will appear in about a month.

Parts in the Southeast

No. 1499 (Service man, Florida)—"Kindly advise me where I can secure replacement parts in this part of the country."

Answer—Home Appliance Service Co., 714 W. Market St., Greensboro, N. C.

Rubber Door Corners

No. 1500 (Manufacturer, Canada)—"Some time ago the writer noticed an advertisement in ELECTRIC REFRIGERATION NEWS covering a rubber corner piece, which when mounted on the corner of a standard refrigerator door would protect the lacquer finish. Please advise the name of the manufacturer sponsoring this advertisement."

Answer—Aetna Rubber Co., Ashtabula, Ohio, advertised this product in the NEWS on Feb. 25, 1933.

Refrigeration Accessories

No. 1501 (Distributor, Iowa)—"We are very much interested in making a connection with manufacturers of various refrigeration accessories such as vegetable pans, water bottles, 'Kon-tanerettes,' defrosting trays, etc. Kindly advise us where to secure a list of such manufacturers."

Answer—A complete list of companies making accessories is published in the REFRIGERATION DIRECTORY AND MARKET DATA BOOK. If you are in a hurry for the list, get the 1932 edition which is now available for \$1 per copy. Of if you can wait for the more up-to-date information, place your order now for the 1934 edition (price \$3) which will be off the press in about a month.

Weight of Steel in Refrigerators

No. 1502 (Research agency, New York)—"In connection with research work concerning general economics of the steel industry, we are desirous of obtaining a rough idea as to the unit consumption of rolled steel in refrigerator production, both household and commercial."

"One of the men in the Frigidaire organization has been good enough to assist us in this matter, and has suggested that we get in touch with you for additional information."

"Would it be possible for you to inform us how much steel on the average goes into (1) a household electric refrigerator, and (2) a commercial installation?"

"We should like to make it clear that we are aware of the variance involved, and wish only a typical or average figure—something which will give us an idea of the order of magnitude involved."

"It would also be of great use to know whether or not there has been a tendency for refrigerators to consume more or less steel over the past few years."

Answer—About a year and a half ago our editorial department started a study of weights of the composite materials going into electric refrigerators, but the job quickly became so involved that it was abandoned before completion.

However, we did prepare a chart of the weights of materials going into a 5-cu. ft. household refrigerator. This indicated that a refrigerator of this size and the conventional wood-and-steel construction has between 190 and 210 lbs. of steel (not including screw machine parts or cast iron), while the "all-steel" 5-cu. ft. refrigerator has around 250 to 260 lbs. of steel.

These figures are for a 5-cu. ft. size, which is below the average, since the most popular sizes sold during the past year were from 6 to 7 cu. ft. in size. The above figures are offered only as indicative of the approximate amount of steel used. To make an accurate study would involve a tremendous amount of detail work.

With respect to commercial installations, we have no data whatsoever. A study of steel in commercial installations would be even more difficult because there are so many different types of installations.

At the present time there does not seem to be any marked tendency either toward, or away from, the use of steel in household refrigerators.

A few years ago, of course, there was a very definite movement toward increased steel in refrigerator construction, but at the present time the situation appears to be about in equilibrium. Practically all household refrigerators are now a composite of

wood and steel construction, with much more steel than was common a few years ago.

A.S.R.E. Meeting on
Noise Elimination

No. 1503 (Manufacturer, Australia)—"In your issue of Nov. 15, I notice that noise elimination in electric refrigerators is to be discussed in the next Detroit A.S.R.E. meeting. If this meeting is reported can you refer me to a copy of it?"

Answer—This meeting was reported with some detail in the Nov. 22 issue of ELECTRIC REFRIGERATION NEWS. If you are particularly interested in this subject you will want to see our Dec. 20 issue which contains a thorough treatment of the subject by Dr. E. J. Abbott of the University of Michigan.

Refrigeration Books

No. 1504 (Distributor, Missouri)—"Can you suggest a number of books on refrigeration engineering? We already have several manuals from the various manufacturers, but would like to know the names of texts published by those not connected with manufacturers."

Answer—One of the most recent texts is the latest edition of "Household Refrigeration," by H. B. Hull, published by Nickerson & Collins Co., 435 N. Waller Ave., Chicago, Ill. This book sells for \$4 per copy.

Another recent one is "Refrigeration," by Moyer & Fittz, published by the McGraw-Hill Book Co., 330 W. 42nd St., New York, N. Y. Price, \$4.

For strictly technical data there is the "Refrigerating Data Book," published by the American Society of Refrigerating Engineers, 37 W. 39th St., New York, N. Y. Price, \$3.50.

Wire Baskets for Refrigerators

No. 1505 (Distributor, Georgia)—"Can you give us names of several manufacturers of wire fruit containers or baskets for electric refrigerators?"

Answer—Try the following:
Peerless Wire Goods Co., Lafayette, Ind.
Union Steel Products Co., Albion, Mich.
United Steel & Wire Co., Battle Creek, Mich.
L. A. Young Spring & Wire Corp., 9200 Russell St., Detroit, Mich.

Refrigeration Manufacturers

No. 1506 (Manufacturer, Illinois)—"We would appreciate your advising us of all manufacturers of refrigerators."

Answer—All refrigeration manufacturers, and suppliers of parts, materials, and accessories will be listed in the forthcoming 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK which will be off the press in about a month.

Export Figures

No. 1507 (Manufacturer, Indiana)—"Where can we obtain figures on exports of household electric refrigerators?"

Answer—In the forthcoming edition of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Kerosene-Operated Refrigerators

No. 1508 (Dealer, Missouri)—"We have had several inquiries regarding kerosene-operated refrigerators made for farm use. Can you give us the names of several dependable manufacturers of this equipment?"

Answer—Three manufacturers are now offering this type of refrigerator: Electrolux Refrigerator Sales, Inc., Evansville, Ind.

Gibson Electric Refrigerator Corp., Greenville, Mich.

Perfection Stove Co., 7609 Platt Ave., Cleveland, Ohio.

Individual Sales

No. 1509 (Dealer, California)—"Can you furnish me with approximately correct figures showing the number of units made and sold by the various refrigerator manufacturers right down the line?"

Answer—Ranking of the various manufacturers by their individual sales is not available. However, for a complete statistical analysis of sales by all electric refrigerator manufacturers for each year since 1920, we would refer you to the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK which will be off the press in about a month.

Coin Meters

No. 1510 (Distributor, California)—"Kindly furnish us with a list of companies manufacturing coin meters such as the 'Meter-Ice' to be used in connection with instalment sales of electric refrigerators."

Answer—The new 1934 REFRIGERATION DIRECTORY AND MARKET DATA Book will list the following manufacturers of coin meters:

General Electric Co., Industrial Dept., Schenectady, N. Y.
International Register Co., 15 S. Throop St., Chicago, Ill.
Landis & Gyr, Inc., 104 Fifth Ave., New York, N. Y.
Mills Novelty Co., 4100 Fullerton Ave., Chicago, Ill.
J. P. Seeburg Corp., 1510 Dayton St., Chicago, Ill.
Shay-West, 616 W. Michigan Ave., Chicago, Ill.
Zell Products Corp., 536 Broadway, New York, N. Y.

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RATES: Fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Bldg., Detroit, Mich.

FRANCHISE WANTED

ATTENTION MANUFACTURERS AND DISTRIBUTORS. Have you voluntarily given up nationally known product and are desirous of making another refrigeration connection in household and commercial fields. These do not have to be same make. We prefer reliable low priced line. Territory is in Northern New York State. McConnell-Richards, Inc., Glens Falls, N. Y.

INDEPENDENT SERVICE COMPANIES

HALECTRIC Thermostat repair service. Ranco, B & B, Two dollars each, one year guarantee, prompt service. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

COMPLETE repair service on evaporators, float valves, compressors and other parts. Small compressor seal repairs, \$2.50 to \$4. Float valve repairs and calibration, \$2.00. Other repair and parts prices on request. Forty-eight hour service. Material and workmanship guaranteed for one year.

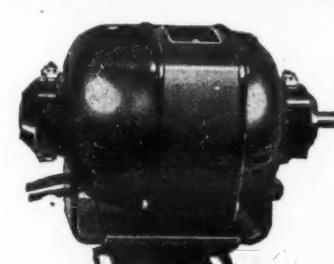
Refrigeration Maintenance Corp., 365 East Illinois Street, Chicago, Illinois.

MISCELLANEOUS

FOR SALE IMPORTANT INVENTION. Holder of patents on highly satisfactory two temperature valve, solicit negotiations from companies interested. This valve is entirely new in design and principle, extremely simple, economical to manufacture and absolutely fool proof. It is fully protected by patents. Box 613. Electric Refrigeration News.

Testing Service
for Domestic and Commercial
Electric Refrigeration

Testing and experimental laboratory service for Manufacturer, Distributor, Central Station. Test data exclusive property of client.

Electrical
Testing Laboratories
80th St. & East End Ave.
New YorkThe Resilient
Flange Mounting
of the Leland

is of particular interest to the refrigerator manufacturer. Because of it, Leland motors have met with favorable reception in this highly specialized field.

Leland designs so mounted operate without transmission of noise and vibration—important in compressor drives. This special mounting also protects against shaft misalignment with respect to the base—another important point.

No radio interference—also due largely to the Leland resilient type of mounting.

Obtain a resiliently mounted Leland motor for comparison and test. You will be surprised.

Leland Motors
A PRECISION BUILT LINE
IN RATINGS UP TO 3 H.P.
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Dayton, Ohio
Canadian Address
Toronto
Cable Address
"Select"